

**THE ROLE OF AFFECT AND TRAIT SEXUAL DESIRE IN SEXUAL
RESPONSE AMONG WOMEN WITH AND WITHOUT SYMPTOMS OF
SEXUAL INTEREST AND AROUSAL DISORDER**

by

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Abstract

According to the Incentive Motivation Model, sexual cue processing is influenced by both responses to the content of sexual cues, and by individual psychological factors, both of which may result in differences in sexual response. Affect to sexual cues has been shown to affect sexual response in women with sexual dysfunctions, who have greater negative affect to sexual cues. The aim of the current study was (1) to examine the moderating role of trait sexual desire on the relationship between affect and sexual response, and (2) examine the differences between SIAD and unaffected women's relationship between affect and sexual response. The current sample included 113 women, 31 of whom met SIAD criteria, and was comprised of data from two studies. In both studies, we measured self-reported sexual arousal (both continuous and discrete), self-reported state sexual desire, and self-reported affect. However, Study One used vaginal photoplethysmography to measure genital arousal, while Study Two used thermography. Thus, Study One and Study Two genital data was meta-analyzed. Contrary to hypotheses, there was no relationship between affect and genital arousal. There were, however, positive relationships between greater levels of positive affect and self-reported sexual arousal, as well as state sexual desire. There was no significant moderation of the relationship between affect and sexual response (either genital arousal or self-reported sexual response) by trait sexual desire. When presence of SIAD symptoms was included as a moderator, differences emerged between SIAD and unaffected women's relationships between affect and sexual response. Namely, SIAD women did not have a significant relationship between affect and sexual response (self-reported arousal and state sexual desire), while unaffected women did. Overall, this thesis provides evidence for the importance in positive affect to sexual cues in SIAD women, which has treatment implications.

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List of Abbreviations

Acoustic Startle Response.....	ASR
Continuous Self-Reported Arousal.....	CSR
Diagnostic and Statistical Manual.....	DSM
Dot Detection Task.....	DDT
Female Sexual Arousal Disorder.....	FSAD
Exploratory Factor Analysis.....	EFA
Incentive Motivation Model.....	IMM
Letter of Information and Consent.....	LOIC
Mindfulness-Based Cognitive Therapy.....	MBCT
Positive and Negative Affect Scale.....	PANAS
Self-Reported Sexual Response.....	SR
Sexual Desire Inventory – 2.....	SDI-2
Standard Deviation.....	SD
Sexual Interest and Arousal Disorder.....	SIAD
Supportive-Expressive Sexual Education Therapy.....	STEP
Vaginal Photoplethysmography.....	VPP
Vaginal Pulse Amplitude.....	VPA

Chapter 1

Introduction

Sexual desire is defined as an individual's motivation or willingness to engage in sexual behaviour (Chivers & Brotto, 2017). Sexual desire is distinct from other aspects of sexuality, such as genital sexual arousal (changes in genital vasocongestion; Schober & Pffaf, 2007; Traish et al., 2002) and self-reported sexual arousal (an individual's report of their sexual excitement; Chivers & Brotto, 2017). In women, low sexual desire has been found to be the most common sexual complaint across the life cycle (Mitchell et al., 2013; Worsley et al., 2017), with representative studies indicating that at least a third of women have experienced low sexual desire for several months (Shifren et al., 2008), with 7-10% of women experiencing clinically significant distress as a result of low sexual desire (Mitchell et al., 2013).

Sexual Interest and Arousal Disorder (SIAD) is a diagnosis which emerged in the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; Association, 2013), and describes problematic low sexual desire in women. To meet criteria for SIAD, a woman must experience an absence or a significant decrease in three or more of the following: interest in sexual activity, sexual or erotic fantasies or thoughts, initiation of sexual activity/responsiveness to a partner's initiation, excitement, or pleasure during $\geq 75\%$ of sexual activity, interest, or arousal in response to sexual internal/external erotic stimuli, or genital/non-genital sensations during $\geq 75\%$ of sexual activity. In addition, these symptoms must have been present for six months or longer and be causing clinically significant distress (Association, 2013).

To understand SIAD women's low sexual desire, it is helpful to understand factors which affect the experience of sexual response. One particularly important internal factor in sexual response is affect to sexual cues, which can be positive or negative in direction (Peterson & Janssen, 2007). In particular, affect may be important to sexual response in SIAD women, as

research on women with other sexual dysfunctions, such as vaginismus, orgasm disorders, and other disorders of sexual arousal, often report lower positive affect, and higher negative affect, to sexual cues (Nobre et al., 2003; Nobre & Pinto-Gouveia, 2006a; Nobre & Pinto-Gouveia, 2006b). Therefore, studying how affect modulates sexual arousal and sexual desire allows for a better understanding of individuals with problematic low sexual desire.

Chapter 2

Literature Review

The Incentive Motivation Model of Sexual Response

The Incentive Motivation Model of sexual response (IMM; Toates, 2009) proposes that sexual response begins with sexual cue processing (Basson, 2001; Dewitte, 2012; Janssen et al., 2000; Toates, 2009) and that cognitive and psychophysiological mechanisms act to produce, maintain, augment or reduce the experience of sexual arousal and desire (Dewitte, 2012; Toates, 2009). To do this, the IMM describes two broad categories of processes: early and late. Early processes are largely involuntary, occur quickly after the onset of the stimulus, and include attentional capture by sexual stimuli (Prause et al., 2008) and early affective processing of sexual stimuli (Giargiari et al., 2005). Early processes result in detection of the sexual nature of the stimuli and triggering of physiological sexual arousal (e.g., neural response, genital vasocongestion; Janssen et al., 2000; Toates, 2009). Later processes are where reactions to sexual feelings, considerations of the consequences of sexual actions, biases and heuristics interact with sexual response (Basson, 2001; Dewitte, 2012; Janssen et al., 2000). In parallel to later cognitive processes, reward assessment decisions are also made, which either result in goal-directed inhibition (in which sexual arousal is inhibited to pursue some goal), or increased sexual motivation (state sexual desire), which leads to sexual behaviour. All these processes are affected by internal individual factors (e.g., individual differences in trait sexual desire), and external factors (e.g., the individual's environment). Lastly, feedback loops can develop within the IMM; for example, the presence of sexual arousal may increase state sexual desire (Toates, 2009).

The Relationship Between Sexual Arousal and Sexual Desire

Sexual desire can be defined as both an individual difference (trait sexual desire; Stark et al., 2015) and a motivational state (state sexual desire; Chivers & Brotto, 2017). State sexual

desire refers to the presence of sexual motivation, which is the drive to engage with, further process, move towards, or behave in a way that enhances sexual cues and sexual actions. Sexual cues can be both internal (e.g., sexual fantasy) and external (e.g., a partner's sexual advance; Toates, 2009). Trait sexual desire is defined as an individual's propensity to experience sexual motivation, which is thought to be a result of both biological and sociocultural influences (Stark et al., 2015). In contrast, state sexual desire can be understood as one's sexual motivation in the moment (Chivers & Brotto, 2017). However, state sexual desire can also be conceptualized as the result of the interaction between trait sexual desire and other factors, such as the presence of adequate sexual cues (Stark et al., 2015).

In line with the IMM, state sexual desire is responsive to external factors, such as contextual cues within sexual stimuli (Both et al., 2004; Dawson & Chivers, 2014a; Goldey & van Anders, 2012). To assess the relationship between sexual desire and sexual cues, Both and colleagues (2004) primed male and female participants with neutral/sexual films, then had participants rate how sexually arousing a set of neutral/sexual pictures were, using rating time as an index of state sexual desire. Both and colleagues (2004) found that sexual interest and responsiveness to sexual pictures were higher in the sexual film prime condition than the neutral condition, providing evidence that state sexual desire can be modulated by the arousability of cues (Both et al., 2004). Similarly, Goldey and van Anders (2012) found that participants in sexual conditions had significantly greater subsequent state sexual desire compared to those in neutral conditions, indicating that participants' state sexual desire was responsive to the sexual nature of the condition (Goldey & van Anders, 2012). When looking at whether intensity of sexual stimuli would affect participants' sexual response, Dawson and Chivers (2014) found that in their sample of men and women, all groups reported significantly greater sexual desire as stimulus intensity increased, going from nude people exercising, to solitary sexual activity (i.e., masturbation), to partnered penetrative sex (Dawson & Chivers, 2014). Thus, state sexual desire

can vary according to arousability (Both et al., 2004), sexual nature (Goldey & Van Anders, 2012) and intensity of sexual cues (Dawson & Chivers, 2014b).

Affect and Sexual Response

Affect is defined as being comprised of both positive (e.g., happiness, excitement) and negative (e.g., sadness, anger, disgust) emotions, as well as broader, poorly identified moods (which may not be associated with discrete emotions; Harmon-Jones & Harmon-Jones; 2021). Affect has been shown to influence processing of sexual cues. For example, neuroimaging research has shown relationships between sexual response and brain areas linked to modulation of affective response (the anterior cingulate cortex; Laan 2007), and affective stimulus processing (the amygdala and posterior insula; Stoléru et al., 2012). However, when studying how affect influences sexual cue processing, it is important to take into account: (1) that sexual cues also elicit both positive and negative affective reactions (Dewitte, 2012; Peterson & Janssen, 2007; Prause et al., 2008), and (2) that sexual response consists of genital sexual arousal, self-reported (or subjective) sexual arousal, and state sexual desire.

There is also evidence that a participant's affect to sexual cues influences their self-reported sexual arousal (Carvalho et al., 2017; Koukounas & McCabe, 2001; Laan et al., 1994; Peterson & Janssen, 2007). Laan and colleagues (1994) found that female participants had significantly higher positive affective ratings as well as significantly higher self-reported sexual arousal when shown positive affective sexual stimuli (i.e., sexual stimuli created by a woman). Similarly, when women's positive affect was induced by a non-sexual affective clip before the target stimulus, visual attention to the clip significantly increased, as did self-reported sexual arousal (Carvalho et al., 2017). In addition, multiple investigations have found that, for women, positive affect to sexual videos was a significant predictor of greater self-reported sexual arousal, in both positive and negative (i.e., coercive) erotic film conditions (Carvalho & Rosa, 2020; Peterson & Janssen, 2007). Carvalho and Rosa (2020) also found when shown coercive sexual

videos, participants with greater negative affect had significantly less self-reported sexual arousal. Therefore, there is significant evidence to indicate that positive (Carvalho et al., 2017; Carvalho & Rosa, 2020; Laan et al., 1994; Peterson & Janssen, 2007) and negative affect (Carvalho & Rosa, 2020; Koukounas & McCabe, 2001), significantly modulate self-reported sexual response.

Anxiety and other negative affective responses also modulate sexual cue processing (Borg & de Jong, 2012; de Jong et al., 2013) and sexual response (Barlow et al., 1983). Disgust to sexual cues impacts sexual cue processing and subsequent behaviours. Borg and de Jong (2012) found that when using sexually arousing, positive affective, and neutral primes before sexual stimuli, female participants rated sexual stimuli as significantly less disgusting, completed more sexual (i.e., lubricating a vibrator), and disgusting tasks (i.e., drinking a cup of water with an insect in the cup) after sexual primes than other prime conditions. Stemming from this, de Jong and colleagues (2013) proposed that sexual arousal occurs when feelings of arousal counteract disgust-based avoidance when viewing sexual stimuli. Therefore, negative affect may also play an important role in sexual cue processing, causing a decreased sexual response to sexual cues.

The relationship between affect and genital response is more fraught. Surprisingly, some investigations have found a significant positive relationship between negative affect (anxiety) and increased genital sexual response (Barlow et al., 1983; Bradford & Meston, 2006; Laan et al., 1995). When examining the relationship between state anxiety, or anxiety one feels in the moment, and sexual arousal, Bradford and Meston (2006) found that participants with moderate state anxiety had greater genital arousal as compared to participants with low and high state anxiety. In Bradford and Meston (2006)'s sample, participants with greater state anxiety also had significantly higher negative affect to sexual cues, including guilt, embarrassment and worry. Therefore, anxiety, and perhaps more broadly negative affect, may inhibit genital sexual arousal.

There has been some investigation into the relationship between affect and state sexual desire. Participants who self-report lower state sexual desire also report greater negative affective

reactions to sexual cues, with participants who report higher state sexual desire also reporting greater positive affect to sexual cues (Carvalho & Nobre, 2010a, 2010b, 2011). In addition, Carvalho and Nobre (2010b) have also found that greater negative affect and negative thoughts during sexual activity predict lower state sexual desire, and that both lower positive affect to sexual cues, and lower baseline positive state affect also predicted lower state sexual desire. Notably, these studies use a retrospective recall of desire, and therefore studying the relationship between affect and state sexual desire in an in-lab study may provide more accurate information about the effect of state variables on sexual response.

Lastly, there is some evidence for the relationship between trait sexual desire and affect (Giargiari et al., 2005; Prause et al., 2008). One method that has been used is the acoustic startle response (ASR), which measures the eyeblink motor response, and is gathered when participants are presented with aversive white noise during affective stimuli viewing. Enhanced eyeblink startle is thought to reflect greater negative affect to stimuli (Lang et al., 1992). When Giargiari and colleagues (2005) exposed participants to the ASR while viewing images featuring single nude men and single nude women, participants with lower trait sexual desire had greater ASR to sexual cues than those with higher trait sexual desire, indicating that lower trait sexual desire may be related to greater negative affect to sexual cues. Building on this, when Prause and colleagues (2008) used both the ASR and a dot detection task (DDT; a type of task which indexes attentional capture to sexual stimuli), participants with higher trait sexual desire took longer to detect targets in DDT than lower sexual desire participants, indicating that high trait sexual desire participants had greater attentional capture by sexual stimuli. However, there were no significant differences between high and low sexual desire participants' ASR responses. Therefore, trait sexual desire may play some role in the relationship between affect and sexual response.

Overall, there is robust evidence to indicate that affect modulates sexual response. Particularly, increased positive affect to sexual stimuli may increase self-reported sexual

response, whereas negative affect generally decreases the sexual response (Carvalho et al., 2017; Koukounas & McCabe, 2001; Laan et al., 1994; Peterson & Janssen, 2007). Regarding state sexual desire, a lack of positive affect is correlated with low levels of state sexual desire (Carvalho & Nobre, 2010a, 2010b, 2011), however, this has not been tested in an in-lab study. While there is evidence that affect modulates self-reported sexual response, findings about directionality are mixed, and few investigations exist that consider state sexual desire. Lastly, while there is some evidence regarding a potential moderating effect of trait sexual desire (Prause et al., 2008), these investigations are limited to early psychophysiological responses such as ASR. Research on the moderating effects of trait sexual desire on self-reported sexual response and genital sexual response would be pertinent, as issues with low trait sexual desire are oftentimes accompanied by reduced self-reported and genital sexual response (Mitchell et al., 2013).

Role of Affect in Sexual Dysfunction

Barlow's (1983) cognitive-affective model of sexual dysfunction posits that individuals with sexual dysfunction enter sexual situations with elevated negative affect, and that their attention is drawn to non-erotic stimuli (e.g., body image concerns, external stressors), which interrupts processing of sexual cues and negatively influences sexual response. More recently, Nobre (2003) proposed a cognitive-emotional model of sexual dysfunction, wherein unhelpful beliefs arise from misinterpretations of prior sexual events. These misinterpretations result in significantly more failure and disengagement during sexual activity (Nobre et al., 2003; Nobre & Pinto-Gouveia, 2006) and greater negative affect (i.e., sadness, disillusion, guilt, and anger; Nobre & Pinto-Gouveia, 2006).

Several studies have provided evidence for the presence of greater negative affect among those with sexual dysfunctions. In a sample of women with and without orgasm difficulties, Moura and colleagues (2020) found that women with orgasm difficulties reported experiencing higher negative affect and lower positive affect during sexual activity than unaffected women. In

addition, Peixoto and Nobre (2016) found that participants with sexual dysfunction (genital pain, low sexual desire, orgasm difficulties) had significantly greater negative affect and lower positive affect (as reported on the PANAS; Watson et al., 1988) than unaffected participants, (Peixoto & Nobre, 2016; Peixoto & Nobre, 2020).

Sexual Interest and Arousal Disorder (SIAD)

There are no investigations into how affect towards sexual cues plays a role in SIAD women's experiences of problematic low sexual desire. However, the DSM-IV-TR's Female Sexual Arousal Disorder (FSAD; Association, 2000) diagnosis is similar in many ways, including being characterized by a persistent or recurrent inability to attain sexual arousal via both lubrication and vasocongestive responses (Graham, 2010). Therefore, findings for FSAD women may also apply to SIAD women.

One question is whether FSAD/SIAD women have a reduced capacity for genital arousal, which would explain experiences of problematic low sexual desire. Historically, investigations have found no significant differences between genital response in FSAD and unaffected women (Brotto et al., 2004; Laan et al., 2008). However, there is some evidence to suggest that women who report lower genital and subjective sexual arousal (previously categorized as genital arousal FSAD/subjective sexual arousal FSAD) exhibit less genital arousal than unaffected women (Meston et al., 2010). In addition to genital arousal, FSAD women self-reported significantly less self-reported sexual arousal than unaffected women (Brotto et al., 2004). Furthermore, Laan and colleagues (2008) found that FSAD women scored lower than non-FSAD women on both sexual arousal and genital sensations and reported significantly greater negative affect and significantly lower positive affect than unaffected women. Overall, given similarities between FSAD and SIAD, it is utile to examine genital and self-reported sexual arousal in SIAD women.

Current Study

While there has been prior research on the relationship between affect and sexual response in women with other sexual dysfunctions, no research has examined the relationship between affect and sexual response in women with SIAD symptoms (referred to as SIAD women). Given an abundance of evidence showing relationships among affect, sexual arousal, and sexual desire, better understanding these relationships in SIAD women will both contribute to both models of sexual functioning and interventions for problematic low sexual desire.

Using the IMM to conceptualize problematic sexual desire, psychological factors, such as affect to sexual cues, modulate sexual response (genital arousal, self-reported sexual arousal, state sexual desire). This relationship is supported by current evidence in typically-functioning people: high positive affect is related to increased self-reported sexual arousal (Carvalho et al., 2017; Peterson & Janssen, 2007) and negative affect to sexual cues has been linked to decreased sexual arousal in women (Peterson & Janssen, 2007). In addition, retrospective reports of state sexual desire are predicted by positive affect (Carvalho & Nobre, 2010a, 2010b, 2011), but this relationship has yet to be shown in a laboratory study. The IMM also posits that individual differences, such as trait sexual desire (Giargiari et al., 2005; Prause et al., 2008) moderate the relationship between sexual cue processing and sexual response, with data supporting the relationship between low trait sexual desire and greater negative affect to sexual cues than those with higher trait sexual desire (Laan et al., 2008; Nobre et al., 2003; Nobre & Pinto-Gouveia, 2006). Therefore, the relationship between affect and sexual response may be moderated by trait sexual desire, and those with greater trait sexual desire may have a stronger relationship between positive affect and sexual response than those with low trait sexual desire.

Lastly, no research exists comparing the effects of low trait sexual desire and SIAD on sexual response. While absence of sexual desire is one of the polythetic criteria in the SIAD diagnosis, it is not required that women report low sexual desire to receive the diagnosis

(American Psychiatric Association, 2013). The comparison between the effects of levels of trait sexual desire and SIAD on sexual response is important as some critics suggest that the endorsement of differing symptoms may result in differing symptom profiles, increasing SIAD diagnosis heterogeneity (Brotto, 2017). By comparing differences in modulation of sexual response by the presence of SIAD symptoms and by levels of trait sexual desire, we can better distinguish the effects of low trait sexual desire from SIAD. This may lead to the discovery of SIAD symptom profiles, or the identification of low trait sexual desire as a treatment target.

Study Overview and Hypotheses

To examine the relationship between affect and sexual response, I used archival data from two studies examining sexual response among women with and without symptoms consistent with a SIAD diagnosis (no diagnosis communicated). Across both studies, participants viewed the same male-female audiovisual sexual stimulus. Both studies measured sexual response (genital arousal, self-reported sexual arousal, continuous self-reported sexual arousal [CSR]), affect (via self-report), and sexual desire (both trait and state). I sought to answer two broad research questions:

Question 1. *What are the effects of trait sexual desire on the relationship between affect and sexual response?* I predicted that for all sexual response measures (i.e., genital arousal, self-reported sexual arousal, CSR, and state sexual desire), greater positive affect to sexual stimuli would significantly predict greater sexual response. Conversely, greater negative affect would predict significantly less sexual response, across all measures of sexual response. This relationship would be moderated by trait sexual desire. For high trait sexual desire women, the positive relationships between positive affect and all measures of sexual response would be larger than for low trait sexual desire women.

Question 2. *Compared to unaffected women, do SIAD women have a different relationship between affect and sexual response?* I predicted across all sexual response measures

(see Question 1), greater positive affect to sexual stimuli would significantly predict greater sexual response. Conversely, greater negative affect would predict significantly less sexual response, across all measures of sexual response. Participant group (unaffected, SIAD) would moderate the relationship between affect and sexual response; for unaffected participants, there would be a greater effect size for the positive relationship between affect and all measures of sexual response than for SIAD participants.

Chapter 3

Methods

Study One

Participants

Participants were androphilic (i.e., reporting being primarily or exclusively attracted to men) women without sexual difficulties (unaffected women: $n = 51$, $M_{\text{age}} = 24.47$, $SD = 7.54$, age range of 18 to 48) and SIAD women ($n = 16$, $M_{\text{age}} = 23.69$, $SD = 5.60$, age range of 18 to 37) who were recruited via advertisements on Queen's campus, in the Kingston community, and on relevant internet message boards. Participants were older than 18 years old, fluent in English, did not have a sexually transmitted infection, were not pregnant/trying to conceive/breastfeeding, had experienced vaginal penetration (i.e., sexual activity, using menstrual tampons, undergoing a pelvic examination), did not experience pelvic/vulvar pain (i.e., superficial pain during over 50% of sexual activities/insertion) in the last six months, did not have an endocrine or hormone disorder, did not currently use tobacco, were not currently experiencing a major depressive episode/another psychiatric disorder that affected their daily functioning, did not have a physical condition that impeded their participation in psychophysiological assessments (i.e., physical injuries), had a Body Mass Index (BMI) between 18.5 and 29.9, and were able to attend three laboratory testing sessions around the same time each month. In addition, participants could not be taking neuroleptics, blood pressure medications, or cold/allergy medications due to possible interference of these medications on sexual response (Meston & Frohlich, 2000).

SIAD Screening

All women were screened using the SIAD screener (see Appendix A for SIAD screener items). This 6-item screener, developed by Dr. Lori Brotto (unpublished) assesses symptoms

associated with low desire and arousal, with a score greater than 0 on three or more of the items indicating the woman would meet criteria for a SIAD diagnosis. All eligible women also underwent a 60-minute structured clinical interview to assess sexual interest and arousal.

Participant Exclusion

While a total of $n = 77$ participants were recruited, some were excluded from analyses due to problematic data. The final sample sizes for each analysis for all dependent variables (VPP, self-reported sexual arousal, CSR, state sexual desire) were $n_{unaffected} = 51$, and $n_{SIAD} = 16$.

Background Information

Participants completed a standard questionnaire battery, which included demographic questions and items related to sexual history and functioning (see Appendix B for measures included in this thesis). In comparisons between unaffected and SIAD women, there were no significant differences on any demographic characteristics (all p 's > .05). See Table 1 for a summary of participant demographic characteristics.

Table 1
Demographics for Study One Divided by SIAD and Unaffected Participants

	<i>Unaffected</i>		<i>SIAD</i>	
	<i>n (%)</i>	<i>M (SD)</i>	<i>n (%)</i>	<i>M (SD)</i>
Age		24.47 (7.54)		23.69 (5.60)
Ethnicity				
Asian	5 (9.8%)		1 (6.3%)	
European	35 (68.6%)		13 (81.3%)	
Hispanic	1 (2.0%)		0 (0.0%)	
African	0 (0.0%)		1 (6.3%)	
Other	10 (19.6%)		1 (1.1%)	
Employment Status				
Full Time Work	10 (19.6%)		4 (25.0%)	
Part-Time Work	15 (29.4%)		5 (31.3%)	
Full Time Student	23 (45.1%)		4 (25.0%)	
Other	3 (5.9%)		3 (18.8%)	
Sexual Orientation (Labels)				
Heterosexual	44 (86.3%)		14 (87.5%)	
Lesbian/Gay	0 (0.0%)		0 (0.0%)	
Bisexual	3 (5.9%)		1 (6.3%)	
Queer	0 (0.0%)		0 (0.0%)	

No label used	0 (0.0%)	2 (12.5%)
Other	1 (2.0%)	1 (6.3%)
Missing	3 (5.88%)	0 (0.0%)
Romantic Involvement		
With One person	45 (88.2%)	15 (93.8%)
One Plus Person	3 (5.9%)	1 (6.3%)
Sexual Involvement		
With One Person	42 (82.4%)	13 (81.3%)
More Than One Person	5 (9.8%)	2 (12.5%)
Missing	4 (7.84%)	1 (6.25%)
Gender of People Involved With		
One Person – Male	48 (94.1%)	15 (93.8%)
One Person – Female	1 (2.0%)	0 (0.0%)
One Plus Person – Male	10 (19.6%)	14 (87.5)
One Plus Person – Female	0 (0.0%)	0 (0.0%)
Exclusivity of Relationship		
Monogamous/Exclusive	41 (80.4%)	14 (87.5%)
Non-Monogamous/ Non-Exclusive	8 (15.7%)	2 (12.5%)
Missing	2 (3.92%)	0 (0.0%)
Relationship Status		
Dating	44 (86.3%)	11 (68.8%)
Engaged	2 (3.9%)	2 (12.5%)
Married	5 (9.8%)	2 (12.5%)
Common-Law	0 (0.0%)	1 (6.3%)
Relationship Length in Year (if applicable)	2.77(3.99)	3.06 (3.70)
Highest Education Completed		
High School (or equivalent)	4 (7.8%)	1 (6.3%)
Community College (attending or completed)	4 (7.8%)	4 (25.0%)
University (attending or completed bachelor's degree)	36 (70.6%)	10 (62.5%)
Graduate or professional school (attending of completed)	7 (13.7%)	1 (6.3%)

Note. Table 1 presents demographics of Study One separated by participant group: unaffected ($n = 51$), and SIAD ($n = 16$). Participants were given the option to select multiple responses on the Gender of People Involved With, and Sexual Orientation questions. Unlike in Study Two, participants were not given the option to fill in their ethnicities or sexual orientations if selecting the “Other” option.

Apparatus and Materials

Experimental Stimuli

During each experimental session, participants viewed one of three, twelve-minute audiovisual stimuli depicting either a cisgender man and woman engaging in oral and penetrative sex (women's preferred stimulus), two cisgender men having sex (women's non-preferred stimulus), and a ten-minute travelogue (neutral film). Stimuli were preselected for high sexual arousal and positive affect ratings from previous research. Women were randomized one of two stimulus orders: (1) preferred stimulus, neutral stimulus, non-preferred stimulus (Stimulus Order One), (2) non-preferred stimulus, neutral stimulus, preferred stimulus (Stimulus Order Two).

Measures

Self-Reported Sexual Arousal

Self-reported sexual arousal was measured in the same way across Study One and Study Two. In both studies, participants reported their levels of sexual arousal by responding to two items from the Film & Tape Scale (Hackbert & Heiman, 2002; Heiman, 1977) that appeared on the television monitor. Before stimuli presentation, participants were asked: "*How sexually aroused do you feel?*" (0 = no sexual arousal at all, 9 = highest I've ever felt, associated with orgasm), "*How strong are your genital sensations?*" (0 = no genital sensations at all, 9 = intensely). After stimulus presentation, participants responded to: "*How high was your sexual arousal during the video?*" (0 = no sexual arousal at all, 9 = highest I've ever felt, associated with orgasm), "*How strong were your genital sensations during the video?*" (0 = no genital sensations at all, 9 = intensely). Before each film, participants viewed a series of questions on the television screen, which they responded to via selecting a number on a keypad.

Affect

In Studies One and Two, positive and negative affect was measured via the administration of self-report questions before and after each film. Note that while Study One

employed the full 41-item Film & Tape Scale (Hackbert & Heiman, 2002; Heiman, 1977), to reduce the length of the session, Study Two employed an abbreviated versions of the Film & Tape Scale for pre-stimulus presentation (ten items), and post-stimulus presentation (16 items). Thus, the pre- and post- stimuli Film & Tape scales differed both in-study and between pre- and post- stimulus presentation. To proceed, I used ten common items, six of which pertained to affect. The six pre-stimulus items were: “*How interested do you feel?*”, “*How happy do you feel?*”, “*How relaxed do you feel?*”, “*How bored do you feel?*”, “*How anxious do you feel?*”, “*How disgusted do you feel?*”. The six post-stimulus items were: “*How interested did you feel during the video?*”, “*How happy did you feel during the video?*”, “*How bored did you feel during the video?*”, “*How anxious did you feel during the video?*”, “*How disgusted did you feel during the video?*”. All affective items ranged from 0 (*not at all*), to 9 (*intensely*).

State Sexual Desire

To assess state sexual desire, two items from the Film and Tape Scale were used (Hackbert & Heiman, 2002; Heiman, 1977), which measured solitary and dyadic desire, respectively. Pre-stimulus and post-stimulus state sexual desire were measured by two items: “*How strong is your desire to masturbate?*”, “*How strong is your desire for sex with a partner?*”. All items ranged from 0 (*not at all*), to 9 (*intensely*).

Trait Sexual Desire

To assess trait sexual desire, all participants completed the Sexual Desire Inventory -2 (SDI-2; Spector et al., 1996) in the baseline questionnaires. The SDI-2 is comprised of two subscales, dyadic desire (ranging from 0 to 70) and solitary desire (ranging from 0 to 31), though recent factor analyses have indicated that the SDI-2 is comprised of three factors: dyadic sexual desire (for one’s partner, Cronbach’s $\alpha = .88$), dyadic sexual desire (for an attractive person, Cronbach’s $\alpha = .89$), solitary sexual desire (Cronbach’s $\alpha = .93$; Moyano et al., 2017). In this thesis, I used the total sexual desire score of the SDI-2, which is calculated by summing up all

items on the SDI-2 and is representative of one's total trait sexual desire (Cronbach's $\alpha_{\text{sample}} = .89$), including both solitary (Cronbach's $\alpha_{\text{sample}} = .91$) and dyadic (Cronbach's $\alpha_{\text{sample}} = .89$). Higher scores on the SDI-2 reflect greater trait sexual desire (Spector et al., 1996).

Continuous Self-Reported Sexual Arousal (CSR)

To assess moment-to-moment experiences of sexual arousal, participants pressed either the up or down arrow button on the keypad, which manipulated a vertical bar displayed on the TV monitor. The height of this bar represented participants' level of CSR and ranged from 0 (*Not at all sexually aroused*) to 100 (*Extremely sexually aroused, feelings experienced right before an orgasm*). For CSR, participants were reminded immediately before each stimulus to adjust the bar to their current level of sexual arousal, and that if their sexual arousal levels changed throughout the video, to manipulate the bar in that direction.

Vaginal Photoplethysmography (VPP)

Women's genital responses were assessed using VPP with data sampled using a BIOPAC system (BIOPAC Systems Inc., Goleta, CA). A clitoral/vaginal photoplethysmograph was used, but only the VPP data is included in this thesis. Vaginal pulse amplitude (VPA) was used as a dependent variable, which was measured as the peak-to-trough amplitude for each vaginal pulse. VPA represents changes in vaginal blood flow with each heartbeat and has been shown to be a valid measure of sexual arousal (Laan et al., 1995). Data were sampled at 200 Hz, band-pass filtered (.5-10 Hz), and digitized (40Hz). After each use, the vaginal photoplethysmograph was subjected to high-level disinfection using CidexOPA (ortho-phthalaldehyde, 0.55%).

Procedure

After completing the eligibility screening, participants attended the laboratory for a total of four sessions: an informed consent/clinical interview session and three testing sessions. At the first session, all women were given a structured clinical interview (see SIAD Screening). After,

women had study procedures explained to them, completed the Letter of Information and Consent (LOIC), and had the chance to ask any questions regarding study policies or procedures.

Participant's psychophysiological sessions were scheduled around their menstrual cycle, due to evidence that sexual desire fluctuates across the menstrual cycle phase (Jones et al., 2018), as well as in the afternoon, to account for diurnal fluctuations in testosterone (Mortola et al., 1992). The day before their first laboratory session, participants completed a baseline questionnaire online to assess personal information (i.e., age, relationship status, education, household income, ethnicity, employment status, medication, substance use, mental health history, and current sexual health), in addition to information regarding sexual experiences, sexual orientation, sexual functioning, relationship quality, and sexual desire. This questionnaire included the SDI-2 (Spector et al., 1996) to assess trait sexual desire. For a list of other measures administered, see Appendix B. Before each testing session, participants completed a brief questionnaire that included were the Positive and Negative Affect Scale (PANAS; Watson et al., 1988), the Hassles Scale (Kanner et al., 1981), and the Beck Anxiety Inventory (Borden et al., 1991), which was not included in the scope of this thesis.

After the survey, the experimenter explained the VPP to the participants, who were then left in a private room (that locked from the inside) to undress from the waist down and insert the vaginal photoplethysmograph. The experimenter was able to communicate with the participants via an intercom throughout the session. Participants sat in the recliner for the duration of the session. During the session, participants watched a ten-minute-long baseline video, then one of the three twelve-minute experimental stimuli (preferred sexual, non-preferred sexual, and neutral). They answered self-report questions before and after each stimulus, using a keypad (see Self-Reported Arousal, Affect). During presentation, participants reported CSR via the keypad. After the second video, participants completed an opened-ended thought journal (not included in the scope of this thesis). In total, the psychophysiological testing took approximately an hour.

Participants then removed the vaginal photoplethysmography, dressed, and completed a brief questionnaire regarding their experiences and comfort during the study on an iPad, which took approximately 10-15 minutes (not included in this thesis). Within 72 hours after the laboratory session, participants completed an online questionnaire that asked about sexual behaviours, feelings, and sexual desire (not included in this thesis).

Participants completed three psychophysiological testing sessions (each one month apart), and one final survey, one month after their final physiological testing session (not included in the scope of this thesis). Participants were paid up to 200 dollars; a 50-dollar honorarium for each psychophysiological session/online questionnaire, and a 50-dollar bonus if they completed all three sessions to incentivize participant retention. All study procedures were approved by the Health Sciences Research and Ethics Board at Queen's University.

Study Two

Participants

Participants were androphilic (i.e., reporting being or exclusively being attracted to men) women without sexual difficulties ($n = 32$, $M_{age} = 20.84$, $SD = 3.63$, range of 18 to 35) and SIAD women ($n = 14$, $M_{age} = 21.14$, $SD = 4.33$, range of 18 to 35) who were recruited through poster advertisements on Queen's University campus/in Kingston community and advertisements on relevant internet community message boards. Participant criteria were the same between Study Two and Study One, with the exception that participants in Study Two had to be between 18 and 50 years old.

Participant Exclusion

For Study Two, a total of $n = 47$ participants were recruited. However, data from one participant was excluded due to poor data quality. Thus, the final sample sizes for all dependent variables (i.e., thermography, self-reported sexual arousal, CSR, state sexual desire) were $n_{unaffected} = 32$ and $n_{SIAD} = 14$.

Background Information

As in Study One, participants completed a baseline questionnaire to measure demographic information, along with sexual history and functioning (see Appendix B for measures included in this thesis). In comparisons between unaffected and SIAD women, there were no significant differences on any demographic characteristics (all p 's > .05). See Table 2 for a summary of participant demographic characteristics.

Table 2

Demographics for Study Two Divided by SIAD and Unaffected Participants

	<i>Unaffected</i>		<i>SIAD</i>	
	<i>n (%)</i>	<i>M (SD)</i>	<i>n (%)</i>	<i>M (SD)</i>
Age		20.84 (3.63)		21.14 (4.33)
Ethnicity				
Asian	6 (18.8%)*		1 (7.1%)	
European	23 (68.8%)*		12 (85.7%)	
Hispanic	2 (6.3%)		0 (0.0%)	
Middle Eastern	1 (3.1%)*		0 (0.0%)	
African	0 (0.0%)		1 (7.1%)	
North African	1 (3.1%)*		0 (0.0%)	
Employment Status				
Full Time Work	2 (6.3%)		0 (0.0%)	
Part-Time Work	13 (40.6%)		6 (42.8%)	
Full Time Student	15 (46.9%)		8 (57.1%)	
Currently Unemployed	2 (6.3%)		0 (0.0%)	
Sexual Orientation (Labels)				
Heterosexual	27 (84.4%)		13 (92.9%)	
Lesbian/Gay	0 (0.0%)		0 (0.0%)	
Bisexual	4 (12.5%)		1 (7.1%)	
Queer	1 (3.1%)		0 (0.0%)	
No label used	4 (12.5%)		0 (0.0%)	
Bi-curious	1 (3.1%)		0 (0.0%)	
Romantic Involvement				
With One person	22 (68.8%)		10 (71.4%)	
One Plus Person	2 (6.3%)		1 (7.1%)	
Sexual Involvement				
With One Person	19 (59.4%)		10 (71.4%)	
One Plus Person	5 (15.6%)		1 (7.1%)	
Gender of People Involved With				
One Person – Male	25 (78.1%)		12 (85.7%)	
One Person – Female	1 (3.1%)		0 (0.0%)	
One Plus Person – Male	6 (18.8%)		1 (7.1%)	

One Plus Person – Female	1 (3.1%)		0 (0.0%)
Exclusivity of Relationships			
Exclusive/Monogamous	23 (71.9%)		12 (85.7%)
Non-exclusive/Non-Monogamous	7 (21.9%)		1 (7.1%)
No Sexual Relationship	2 (6.3%)		1 (7.1%)
Relationship Status			
Single	7 (21.9%)		2 (14.3%)
Dating	23 (71.9%)		11 (78.6%)
Married	1 (3.1%)		1 (7.1%)
Common Law	1 (3.1%)		0 (0.0%)
Relationship Length in Year (if applicable)		2.32 (2.37)	2.69 (5.41)
Highest Education Completed			
High School (or equivalent)	2 (6.3%)		0 (0.0%)
Community College (attending or completed)	0 (0.0%)		0 (0.0%)
University (attending or completed bachelor's degree)	29 (90.6%)		13 (92.9%)
Graduate or professional school (attending or completed)	1 (3.1%)		1 (7.1%)

Note. Table 2 presents demographics of Study Two separated by participant group: Unaffected ($n = 32$), and SIAD ($n = 14$). *For ethnicity, participants were also given the option to enter their origin in a text box. One participant entered European/Asian, thus was counted once in both categories. Two entered the Middle East and North Africa respectively, thus were separately categorized.

Apparatus and Materials

Experimental Stimulus

Participants viewed two audiovisual stimuli in the following order: a twelve-minute sexual stimulus depicting a cisgender man and women having sex (i.e., the same stimuli as in Study One) and a ten-minute travelogue film (neutral stimuli).

Measures

Both self-reported sexual arousal, CSR, state sexual desire, and affect were measured in the same method as Study One (see Study One, Measures).

Thermography

A TS9230 Thermo Tracer (NEC Avio Co.) provided by Soltec Inc. (San Fernando, CA) continually monitored women's genital temperature at a sampling rate of 60 Hz, averaged to yield one frame per second. The camera's sensitivity was 0.08°C, and the camera's operating range was from -40°C to 120°C. The camera's dimensions were 80 x 87 x 211 mm. For testing, the camera was placed directly facing the chair the participants were seated in, at approximately 2 feet away, at a height of 2 feet off the ground, and an angle of 20 degrees. The region of interest (ROI) for the thermography analyses was on the left labia majora, which replicated previous research methods (Huberman & Chivers, 2015). To ensure that temperature changes were specific to participant's genitals, a control ROI on the inner thigh was used. In addition, the clitoris was also selected as a ROI for analysis (beyond the scope of this thesis).

Procedure

Participants completed the eligibility screening via the phone. Upon arrival to the laboratory, participants reviewed protocols, completed the LOIC, and had any questions answered. Participants then completed the baseline questionnaire, which assessed sexual functioning, sexual arousal, relationship quality, and sexual desire, including the SDI-2 (Spector et al., 1996). Then, participants positioned themselves in the testing chair while clothed, allowing for the experimenter to check the positioning of the thermography camera from the control room. After any adjustments were made, participants locked the door, got undressed from the waist down, and put themselves in the chair with headphones on. Participants then viewed the two experimental stimuli. Immediately before and after each stimulus, participants rated their affective response to stimuli, state sexual desire, and state sexual arousal (see Study One, Measures). CSR was assessed during stimuli presentation via the same keypad as Study One. After each video, participants completed the same thought journal as in Study One. After the sexual arousal assessment, participants completed a post-arousal assessment survey on an iPad,

then answered a final question via the television screen measuring their current level of sexual arousal (“*How sexually aroused do you feel right now?*”) that varied from 0 (*No arousal*) to 9 (*Most arousal I’ve ever felt*). If a participant’s answer was greater than 3 out of 10, they viewed an additional three-minute neutral stimuli to return to a baseline level of sexual arousal. Both 24 and 72 hours after the laboratory session, participants completed questionnaires online to assess their experiences of sexual desire and behaviour (not included in this thesis). For full participation in the study (psychophysiological session, two online questionnaires), participants were given a 80-dollar honorarium. All study procedures were approved by the Health Sciences Research and Ethics Board at Queen’s University.

Measures

All measures in Study Two were identical to Study One.

Data Reduction and Preparation of Study 1 and Study 2 Genital Response Data

VPP

Prior to data analysis, movement artifacts in VPA waveforms were deleted via visual inspection. VPA data during experimental stimuli were reduced to 30 second bins, with a 30 second pre-stimulus baseline period (to compare pre-stimulus responding to during stimulus responding). Across both studies, sexual stimuli were divided into 24 bins, with neutral stimuli having 20 bins. Baseline sexual response was computed in the 30 seconds participants were answering pre-trial questions. After this, mean VPA relative to pre-trial baseline was computed via subtracting baseline sexual response from mean sexual response across bins. Mean responding was used instead of peak sexual response as it captures a more stable, sustained signal (Pulverman et al., 2015).

Thermography

Prior to data analysis on the thermography data, camera-tracking software (MatchMover 2012, Autodesk Inc., San Rafael, CA) was used to assess and track colour contrast, enhancing

data quality and processing speed (Huberman & Chivers, 2015). With MatchMover, a list of X-Y coordinates for the center pixel of the ROIs for each frame (i.e., each second of each trial) were calculated, which were then linked to the X-Y coordinates with temperature data using Matlab 2017b (MathWorks Inc., Natick, MA). This allowed for the creation of ROIs with radiuses of three pixels for each frame and averaging the temperature across each ROI. Then, genital and thigh temperature were averaged every 15 seconds, which yielded 48 data points for the twelve-minute sexual stimulus. Binning (i.e., averaging for each 15-second interval) was done to smooth the temperature data, which allowed for the reduction of error (Huberman et al., 2015). Forty-six participants had usable labia, and thigh data, though five did not have any clitoral data, due to technical issues in data collection. No participants were missing any bins in their data. After binning the thermography data, changes in mean labial, clitoral and thigh temperature relative to pre-trial baseline (computing using the 20 seconds prior to stimulus onset) were computed for the neutral and sexual stimuli.

CSR

To examine changes in CSR, mean CSR relative to pre-stimulus baseline was reported via subtracting mean CSR (computed throughout the trial) from pre-trial baseline.

Affect and Arousal Composites

Exploratory Factor Analysis

To derive composite scores for self-reported sexual arousal, positive affect, and negative affect, a factor analysis of the ten selected Film & Tape Scale questions was conducted.

Originally, a confirmatory factor analysis was conceptualized, replicating previous factor analyses of the Film & Tape Scale (Laan et al., 2008). However, given that only 10 items were common between Study One and Study Two, an exploratory factor analysis (EFA) was conducted with the 10 common items (see Study One, Measures for more information).

Several criteria indicated that these items were factorable. Firstly, when correlated, all items had a correlation of at least .3 with at least one other item (see Table 3). Secondly, the Kaiser-Meyer-Olkin measure of sampling adequacy was .86, which is above the commonly recommended value of .6 (Hill, 2011). Lastly, Barlett’s test of sphericity was significant $\chi^2(45) = 611.48, p < .001$. Given these indications, EFA was deemed to be suitable with ten items.

Table 3

Correlations Between Factor Analyzed Items on Film & Tape Scale

	1	2	3	4	5	6	7	8	9	10
1. Aroused	-									
2. Gen. Sens.	.85**	-								
3. Desire (P)	.68**	.70**	-							
4. Desire (S)	.68**	.68**	.62**	-						
5. Happy	.50**	.57**	.44**	.42**	-					
6. Interested	.70**	.71**	.58**	.62**	.70**	-				
7. Relaxed	.41**	.50**	.44**	.34**	.68**	.62**	-			
8. Bored	-.29**	-.15	-.17	-.05	-.24*	-.23*	-.16	-		
9. Anxious	-.29**	-.22*	-.26**	-.23*	-.36**	-.32**	-.36**	.19*	-	
10. Disgusted	-.08	-.01	-.07	-.07	-.13	-.07	-.15	.24	.35**	-

Note. * $p < .05$, ** $p < .01$, Gen. Sens. = Genital Sensations, Desire (P) = Partnered Sexual Desire, Desire (S) = Solitary Sexual Desire (Masturbation).

The EFA was conducted, using a Maximum Likelihood analysis with a direct oblimin method given the expectation of correlations between factors (Costello & Osborne, 2005). The EFA yielded a two-factor solution, explaining a total of 52.59% of the variance for the ten questions. Factor 1 was labelled Sexual Response (SR), due to high loading by the following items: “How high was your sexual arousal during the video?”, “How strong were your genital sensations?”, “How strong was your desire for sex with a partner?”, and “How strong was your desire to masturbate?”. Initially, sexual desire and sexual arousal were expected to load onto different factors. However, given the strength of the loadings by sexual desire and affect, the Self-

Reported Sexual Response (SR) composite was created, which accounted for 44.82% of variance. Factor 2 was labeled Affect, due to high loadings by the following items: “*How anxious did you feel during the video?*”, “*How happy did you feel during the video?*”, and “*How interested did you feel during the video?*”. Factor 2 accounted for 7.76% of the variance.

In the first round of exploratory factor analysis, two items were eliminated because they did not contribute to either of the two factors, failed to meet the minimum criterion of having a primary factor loading of 0.4 or above, and had no cross-loadings of 0.3 or above. The item “*How bored did you feel during this video?*” did not meet factor loading criteria on either the SR factor (-0.03) or on the Affect factor (0.24). In addition, the item “*How interested did you feel during the video?*” had a factor loading of over 0.4 on both the SR composite (0.48) and the Affect composite (-0.48), thus it was not included. Lastly, the item “*How disgusted did you feel during the video?*” did not meet factor loading criteria on either the Sexual Response composite (0.03) or the Affect composite (0.20). However, given the evidence that disgust plays a particular role in the affective processing of sexual stimuli (Borg & de Jong, 2012; de Jong et al., 2013), disgust was included in the affect composite.

For the final stage, an exploratory factor analysis of the remaining eight items was conducted using a direct oblimin method rotation. In this analysis, the total factors explained a combined total of 68.30% of the variance. Factor 1 (Sexual Response) and Factor 2 (Affect) had a moderate correlation of .58, verifying the assumption of correlation between factors. Except for disgust, all items had a primary factor loading of over 0.35, with no cross-loadings above 0.3. See Table 4 for final factor loadings.

Table 4
Factor Loadings of Post-Stimulus Sexual Arousal and Affect Questions

	Factor 1 Sexual Response	Factor 2 Affect
Sexual Arousal	0.95	-0.06

Genital Sensations	0.88	0.08
Desire for Sex (Partner)	0.70	0.09
Strength of Desire to Masturbate	0.77	-0.03
Happy	0.17	0.69
Relaxed	-0.02	0.88
Anxious	-0.05	-0.40
Disgust	0.03	-0.21

Note. Table 4 presents initial factor loadings for post-stimulus sexual arousal and affect questions. The grey shaded portion of each column references the factor which items loaded onto.

Summation of SR and Affect Composites

SR and Affect composites were calculated pre- and post-stimulus presentation by summing the items that loaded each factor. The Anxious and Disgust items were reverse coded for the Affect composite, such that higher negative affect (i.e., greater scores) were recoded into lower positive affect scores (i.e., lower scores on recoded items). Both the SR and Affect composites ranged from 0 to 36. Composites were then summed; see Table 5 for summary statistics separated by participant group (unaffected, SIAD). Means are presented in Table 5 to aid with interpretation (scores range from 0 to 9). Unaffected participants endorsed significantly greater post-stimulus SR than SIAD participants $t(111) = 2.86, p = .005, d = 1.44, 95\% \text{ CI } [0.29, 1.47]$. There were no significant group differences in pre and post Affect scores, p 's > .05, d 's < 0.9.

Table 5

Summary Statistics for Affect and SR Separated by Participant Group

	SIAD (M, SD) <i>n</i> = 30	Unaffected (M, SD) <i>n</i> = 83
Sexual Response (Pre)	1.29 (0.57)	1.48 (0.64)
Sexual Response (Post)	4.41 (1.47) **	3.53 (1.35) **
Affect (Pre)	5.80 (0.77)	6.11 (0.81)
Affect (Post)	5.50 (0.17)	5.80 (0.94)

Note. Table 5 presents means and standard deviations for Self-Reported Sexual Arousal (SR) and Affect composites, pre and post sexual stimuli viewing. Mean scores on both the Sexual Arousal and Sexual Affect Composite range from 0 to 9. * $p < .05$, ** $p < .01$, *** $p < .001$.

Outlier Removal

For all moderations and mediations, outliers were defined as data points falling greater than 3 SD's away from the mean. For all dependent variables (post-stimulus SR, post-stimulus state sexual desire, mean minus baseline labial temperature, mean minus baseline VPA, mean minus baseline CSR), no more than one outlier was identified. Only CSR and labial temperature each had one outlier. In addition, the post-stimulus Affect composite included one outlier. To preserve power, all data was retained. For my proposed moderator of Trait Sexual Desire, no outliers were identified. Of the covariates for analysis (pre-stimulus SR, pre-stimulus state sexual desire, pre-stimulus Affect), only pre-stimulus state sexual desire had three outliers, which were in the opposite direction from the predicted effects. I assessed normality by examining skew and kurtosis as well as frequency distribution histograms for each variable. No variables deviated substantially from normality, and thus none were transformed.

Trait Sexual Desire Distribution Analyses

To examine the effect of participant group (unaffected, SIAD) on a participant's total Trait Sexual desire, I ran a t-test comparing unaffected and SIAD participant's total SDI scores. Unaffected participants ($M = 63.08$, $SD = 14.19$) had significantly greater trait sexual desire than SIAD participants ($M = 38.13$, $SD = 18.17$), $t(111) = 7.64$, $p < .001$, $d = 1.63$, 95% CI [1.16, 2.09]. Thus, two sets of moderations were conducted, one set with trait sexual desire as a moderator, and another with participant group (unaffected, SIAD) as a moderator.

Chapter 4

Results

Moderation Models

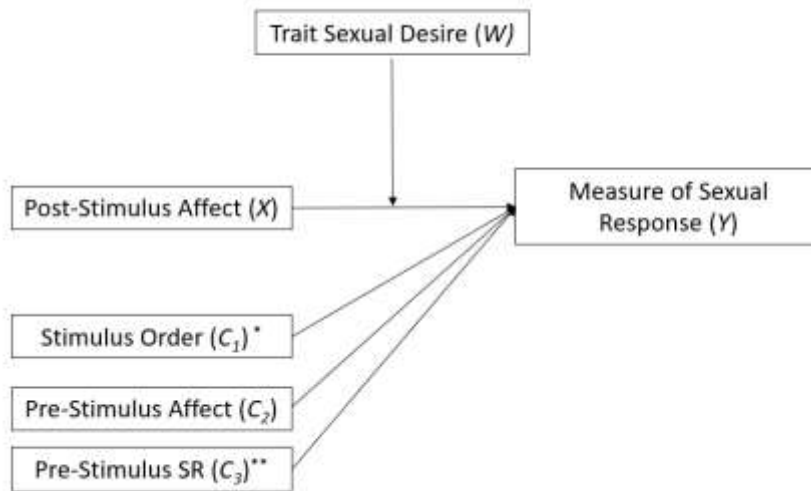
For all moderations, a bootstrapping approach was employed to increase the accuracy of confidence interval estimates (Hayes, 2018; Preacher & Hayes, 2004). All moderation analyses were run using the PROCESS macro for SPSS using Model 1 (Hayes, 2018). Multicollinearity was reduced via centering all variables. As per a-priori hypotheses, all interactions were probed. For moderations with trait sexual desire, interactions were probed at three levels: low trait sexual desire (SDI-2 scores 1 SD below the mean), average trait sexual desire (SDI-2 scores at the mean), and high trait sexual desire (SDI-2 scores 1 SD above the mean). For moderations with SIAD, the interaction was probed by participant group (unaffected, SIAD).

In all models, participants' pre-stimulus affect scores were held as covariates, to account for individual variations in baseline affect. In models where the outcome variable was measured pre- and post-stimulus viewing (i.e., SR, state sexual desire), pre-stimulus viewing scores were included to account for individual variability. For all models with Study One data (all except models with thermography as an outcome variable), Stimulus Order, a dichotomous variable (1 = *Stimulus Order One*, 2 = *Stimulus Order Two*), was added to account for the two stimulus orders in Study One. Participants in Stimulus Order One saw preferred stimuli first, and participants in Stimulus Order Two saw preferred stimuli third (see Study One, Experimental Stimuli). For moderations with only Study Two data (i.e., moderations with thermography), the Stimulus Order variable was not included, as only one sexual stimulus was viewed. For a conceptual and statistical model of all moderation models, see Figure 1.

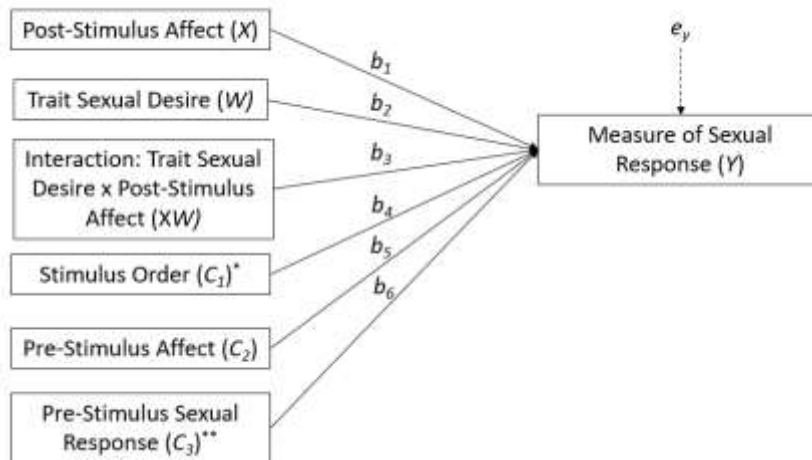
Figure 1

Conceptual and Statistical Model of the Moderation of Affect and Sexual Response by Trait Sexual Desire

a)



b)



Note. a) Visual depiction of the overall conceptual model of a moderation with trait sexual desire as the moderator (W). b) Visual depiction of the overall statistical model of a moderation with trait sexual desire as a moderator (W). For both a) and b), in moderations with SIAD, SIAD is used in place of Trait Sexual Desire (W) * Stimulus Order, which is included in moderations with

SR, CSR, and state sexual desire. ** pre-stimulus SR which is included in moderations with post-stimulus SR.

Moderations with Trait Sexual Desire

See Table 6 for demographic data for all trait sexual desire model variables.

Table 6

Summary Statistics for Moderations with Trait Sexual Desire

Measures	<i>n</i>	M (<i>SD</i>)	Minimum	Maximum
<i>Predictors</i>				
Post-Stimulus Affect	113	24.07 (3.24)	0	36
<i>Moderators</i>				
Trait Sexual Desire	113	56.46 (18.85)	0	112
<i>Covariates</i>				
Pre-Stimulus Affect	113	24.07 (3.24)	0	36
Pre-Stimulus Sexual Response	113	8.71 (2.98)	0	36
Pre-Stimulus State Sexual Desire	113	3.06 (1.74)	0	18
<i>Dependent Variables</i>				
Post-Stimulus Sexual Response	113	16.77 (5.95)	0	36
Post-Stimulus State Sexual Desire	113	8.10 (3.38)	0	18
CSR (Mean – Baseline)	113	29.59 (19.86)	0	100
Thermography (Labial Mean – Baseline)	41	0.66 (0.39)	-0.13	1.61
VPP (Mean – Baseline)	67	0.0017 (0.0017)	-0.0014	0.0064

Note. Thermography was measured in °C. VPP was measured in mV (millivolts). Minimums and maximums for self-reported measures, including CSR, represent theoretical minimums and maximum, or how high a participant could rate themselves. For psychophysiological measures (Thermography, VPP), minimums and maximums represent the sample minimums and maximums.

Moderations by Trait Sexual Desire on Affect and Genital Arousal

To test the relationship between affect and trait sexual desire on genital arousal, I conducted two moderation analyses. For Study One, genital arousal was measured by VPP, and for Study Two, thermography. To synthesize how positive and negative affect were related to genital arousal across both measurement methods, a mini meta-analysis approach was taken (Goh et al., 2016), in which effect sizes for both moderations were calculated.

VPP

There was no effect of post-stimulus affect ($b = 0.0001$, $p = .17$, 95% CI [-0.0001, 0.0004]), or trait sexual desire ($b = -0.00002$, $p = .28$, [-0.00004, 0.00001]), nor Stimulus Order, (covariate, $b = 0.0002$, $p = .59$, [-0.0006, 0.001]), nor pre-stimulus affect, (covariate, $b = -0.0002$, $p = .10$, [-0.0004, 0.00004]) on genital arousal. There was no significant interaction between trait sexual desire and post-stimulus affect ($b = 0.0000002$, $p = .95$, 95% CI [-0.000007, 0.000007]). When the interaction was probed, both participants with low trait sexual desire ($b = 0.0001$, $p = .19$, [-0.00007, 0.0004]), average trait sexual desire ($b = 0.0001$, $p = .17$, [-0.00006, 0.0004]), and high trait sexual desire ($b = 0.0001$, $p = .26$, [-0.0001, 0.0004]), had no significant relationship between post-stimulus affect and genital arousal.

Thermography

There was no effect of post-stimulus affect on genital arousal ($b = 0.01$, $p = .85$, 95% CI [-0.07, 0.06]). In addition, there was no significant effect of trait sexual desire, ($b = -0.001$, $p = .93$ [-0.03, 0.03]), nor pre-stimulus affect, (covariate, $b = 0.04$, $p = .16$, [-0.02, 0.09]). There was no significant interaction between trait sexual desire and post-stimulus affect ($b = 0.0001$, $p = .93$, [-0.001, 0.001]). When interaction was probed, participants with low trait sexual desire ($b = -0.005$, $p = .82$, [-0.04, 0.04]), average trait sexual desire ($b = -0.004$, $p = .87$, [-0.05, 0.04]), and high trait sexual desire ($b = -0.002$, $p = .94$, [-0.06, 0.06]), had no significant relationship between post-stimulus affect and genital arousal.

Mini Meta-Analysis

To determine the overall relationship between affect and genital arousal, and the potential moderation by trait sexual desire, I meta-analyzed the previous genital moderations together. Here, I have reported fixed effects, in which mean effect size (here represented by Pearson's r) was weighted by sample size, due methodological and sample size differences between Study One and Study Two (n Study One $>$ n Study Two; Goh et al., 2016).

I first converted R^2 into Pearson's r for ease of analyses, which was then converted into Fisher's z to compute weighted means (see Table 7). After which, the weighted Pearson's r was calculated and converted back into Pearson's r for ease of presentation. Note that only the moderation path was tested (i.e., that the relationship between affect and genital response would be moderated by trait sexual desire), given that mini meta-analysis is not possible with omnibus testing (Goh et al., 2016). Thus, all paths were not able to be tested. Overall, the effect was not significant, $M_r = .06$, $Z = 0.44$, $p = .65$, such that the relationship between affect and genital response is not significantly moderated by trait sexual desire (i.e., the effect size of the proposed moderation is not significant).

Table 7

R² to r² Conversions for Models Testing the Moderation of Affect and Genital Arousal by Trait Sexual Desire

Measurement Method	n	R^2_{model}	r_{model}	df_{model}	$R^2_{moderation}$	$r_{moderation}$	$df_{moderation}$
VPP	67	0.26	.52	5, 62	0.0001	.01	1, 62
Thermography	40	0.32	.57	4, 36	0.009	.10	1, 36

Note. R^2_{model} refers to the total R^2 for the moderation, while $R^2_{moderation}$ refers to the change in R^2 due to the addition to the moderation term.

Moderation by Trait Sexual Desire on Affect and SR

There was no significant effect of post-stimulus affect on post-stimulus SR ($b = 0.36$, $p = .17$, 95% CI [-0.16, 0.88]), nor was there a significant effect of trait sexual desire SR ($b = -0.01$, $p = .91$, [-0.22, 0.02]), nor was there a significant effect of pre-stimulus affect (covariate, $b = -0.09$, $p = .60$, [-0.44, 0.26]). However, there was a significant effect of Stimulus Order, ($b = -1.81$, $p = .03$, [-3.47, -0.15]), such that participants in Order One had significantly greater post-stimulus SR than participants in Order Two. As well, there was a significant effect of pre-stimulus SR on post-

stimulus SR ($b = 0.93, p < .001, [0.64, 1.22]$), such that greater pre-stimulus SR significantly predicted greater post-stimulus SR.

There was no significant interaction between trait sexual desire and post-stimulus affect ($b = 0.003, p = .52, 95\% \text{ CI } [-0.01, 0.01]$). When probed, participants with low ($b = 0.47, p = .003, [0.16, 0.78]$), average ($b = 0.53, p = .001, [0.22, 0.84]$), and high trait sexual desire ($b = 0.58, p = .004, [0.19, 0.98]$), had a significant positive relationship between post-stimulus affect and post-stimulus SR. Therefore, the relationship between affect and SR did not significantly vary by trait sexual desire.

Moderation by Trait Sexual Desire on Affect and CSR

There was no significant effect of post-stimulus affect ($b = 1.31, p = .10, 95\% \text{ CI } [-0.24, 2.86]$), nor trait sexual desire ($b = 0.18, p = .08, [-0.02, 0.41]$), nor Stimulus Order (covariate; $b = -3.23, p = .43, [-11.41, 4.94]$) on CSR. There was a significant negative effect of pre-stimulus affect ($b = -1.96, p = .03, [-3.73, -0.19]$), such that participants with lower pre-stimulus affect scores, or higher negative affect, had significantly greater CSR during stimulus viewing. There was no significant interaction between trait sexual desire and post-stimulus affect ($b = -0.12, p = .60, [-0.06, 0.03]$). When the interaction was probed, participants with low trait sexual desire ($b = 1.55, p = .051, [-0.01, 3.10]$), average trait sexual desire ($b = 1.31, p = .10, [-0.24, 2.86]$), and high trait sexual desire ($b = 1.07, p = .28, [-0.90, 3.06]$), had no significant relationship between post-stimulus affect and CSR.

Moderation by Trait Sexual Desire on Affect and State Sexual Desire

There was a significant effect of post-stimulus affect on post-stimulus state sexual desire ($b = 0.32, p = .005, 95\% \text{ CI } [0.10, 0.54]$), such that greater positive affect was associated with greater post-stimulus state sexual desire. There was a significant effect of trait sexual desire on post-stimulus state sexual desire ($b = 0.06, p < .001, [0.03, 0.09]$), with greater trait sexual desire predicting greater post-stimulus state sexual desire. For covariates, there was a significant effect

of Stimulus Order on post-stimulus state sexual desire ($b = -1.78, p = .002, [-2.90, -0.67]$), indicating that participants in Order One had significantly greater state sexual desire than participants in Order Two. There was no significant effect of pre-stimulus state sexual desire ($b = 0.20, p = .35, [-0.22, 0.62]$), nor pre-stimulus affect ($b = -0.07, p = .54, [-0.31, 0.17]$) on post-stimulus sexual desire.

There was no significant interaction between trait sexual desire and post-stimulus affect ($b = 0.003, p = .40, 95\% \text{ CI } [-0.004, 0.01]$). Upon probing, there was a significant relationship between post-stimulus affect and post-stimulus sexual desire for low, ($b = 0.27, p = .03, [0.02, 0.51]$), average, ($b = 0.32, p = .005, [0.10, 0.54]$), and high trait sexual desire women ($b = 0.38, p = .006, [0.11, 0.65]$).

Moderations with Participant Group

See Table 8 for summary statistics for all model variables, separated by participant group.

Table 8

Summary Statistics for Moderations by Participant Group

Measures	Unaffected M (SD)	SIAD M (SD)	Minimum	Maximum
<i>Predictors</i>				
Post-Stimulus Affect	23.22 (3.87)	22.00 (3.79)	0	36
<i>Covariates</i>				
Pre-Stimulus Affect	24.42 (3.26)	23.20(3.08)	0	36
Pre-Stimulus Sexual Response	9.04 (3.00)	7.57 (2.40)	0	36
Pre-Stimulus State Sexual Desire	3.14 (1.72)	2.63 (1.43)	0	18
<i>Dependent Variables</i>				
Post-Stimulus Sexual Response	17.64 (5.86)	14.13 (5.42)	0	36
Post-Stimulus State Sexual Desire	8.51 (3.35)	6.77 (3.06)	0	18
CSR (Mean – Baseline)	31.38 (19.18)	24.65 (21.17)	0	100
Thermography (Labial Mean – Baseline)	0.49 (0.38)	0.57 (0.40)	-0.13	1.61
VPP (Mean – Baseline)	0.0015 (0.0012)	0.0023 (0.0019)	-0.0014	0.0064

Note. Thermography was measured in °C. VPP was measured in mV (millivolts). For all measures aside from Thermography and VPP, $n_{\text{unaffected}} = 83$, $n_{\text{SIAD}} = 30$. For Thermography, $n_{\text{unaffected}} = 32$. $n_{\text{SIAD}} = 14$. For VPP, $n_{\text{unaffected}} = 51$, $n_{\text{SIAD}} = 16$.

Moderation by Participant Group on Affect and Genital Arousal

To test the relationship between affect and genital response, and the moderation by SIAD, I conducted two moderations, with VPP (Study One) and thermography (Study Two) as outcome measures, in addition to a mini meta-analytic approach was taken (Goh et al., 2016). See Figure 1 for the conceptual and statistical models of all moderations.

VPP

There was no significant effect of post-stimulus affect ($b = 0.0002$, $p = .16$, 95% CI [-0.0001, 0.0004]), SIAD ($b = 0.008$, $p = .78$, [-0.005, 0.007]), pre-stimulus affect (covariate, $b = -0.002$, $p = .07$, [-0.0004, 0.00002]) or Stimulus Order (covariate, $b = 0.0003$, $p = .45$, [-0.0005, 0.00002]) on genital arousal. There was no significant interaction between genital arousal and SIAD ($b = 0.00001$, $p = 0.97$, [-0.0003, 0.0003]). When probed, both unaffected participants ($b = 0.0002$, $p = .16$, [-0.0001, 0.0004]) and SIAD participants ($b = 0.0002$, $p = .25$, [-0.0001, 0.0004]), had no significant relationship between post-stimulus affect and genital response. Thus, there was no significant relationship between post-stimulus affect and genital response (VPP), and the relationship did not significantly differ by participant group.

Thermography

There was no main effect of post-stimulus affect ($b = 0.002$, $p = .92$, 95% CI [-0.04, 0.04]), SIAD ($b = 0.93$, $p = .23$, [-0.60, 2.46]), or pre-stimulus affect (covariate; $b = 0.04$, $p = .11$, [-0.01, 0.10]) on genital arousal (thermography). There was no significant interaction between SIAD and post-stimulus affect ($b = -0.03$, $p = .30$, [-0.10, 0.03]). When the interaction was probed, neither unaffected participants ($b = 0.002$, $p = .92$, [-0.04, 0.04]), nor SIAD participants ($b = -0.03$, $p = .30$, [-0.09, 0.03]) had a significant relationship between post-stimulus affect and genital response (thermography).

Mini Meta-Analysis

As with previous moderations with genital arousal and affect, I meta-analyzed the two previous moderations between affect, genital response, and SIAD. For more information about the process of the mini meta-analysis (see Moderations with Trait Sexual Desire, Mini Meta-Analysis). Overall, the effect was not significant $M_r = .06$, $Z = 0.78$, $p = .44$, such that the relationship between affect and genital response is not significantly moderated by participant group (i.e., the effect size of the moderation is not significant). See Table 9 for all R^2 and r values.

Table 9

R² to r² Conversions for Models Testing the Moderation of Affect and Genital Arousal by Participant Group

Measurement Method	<i>n</i>	R^2_{model}	r_{model}	df_{model}	$R^2_{moderation}$	$r_{moderation}$	$df_{moderation}$
VPP	67	0.33	.58	5, 61	0.000	.000	1, 62
Thermography	44	0.37	.60	4, 39	0.026	.026	1, 39

Note. R^2_{model} refers to the total R^2 for the moderation, while $R^2_{moderation}$ refers to the change in R^2 due to the addition to the moderation term.

Moderation by Participant Group on Affect and SR

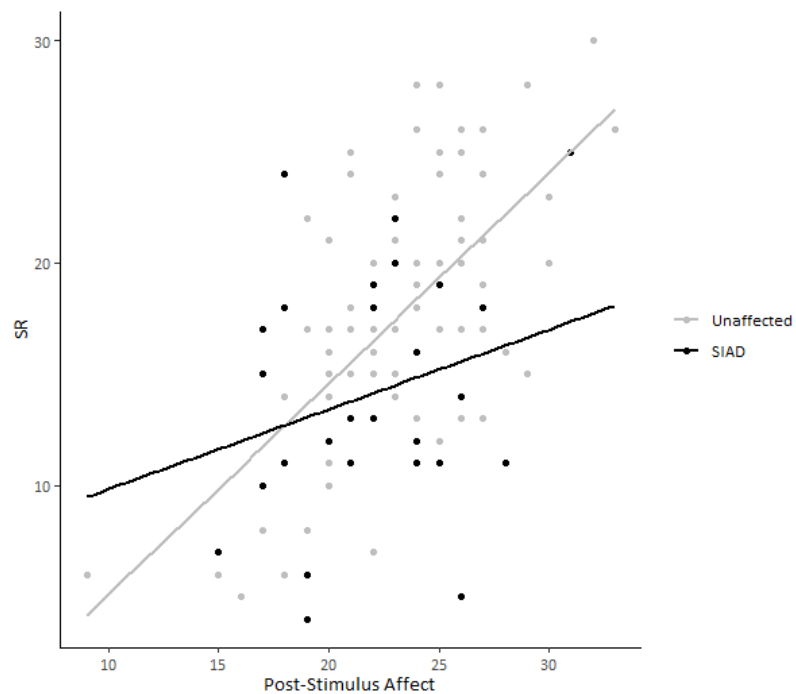
There was a significant effect of post-stimulus affect on post-stimulus SR ($b = 0.59$, $p = .001$, 95% CI [0.30, 0.89]), with greater positive post-stimulus affect predicting significantly greater SR. There was a significant effect of participant group on post-stimulus SR ($b = -1.86$, $p = .03$, [-3.56, -0.15]), such that unaffected participants had significantly greater post-stimulus SR than SIAD participants. There was a significant effect of Stimulus Order (held as a covariate) on post-stimulus sexual arousal ($b = -1.98$, $p = .02$, [-3.64, -0.31]), such that participants in Stimulus Order One had higher post-stimulus SR than those in Stimulus Order Two. There was also a significant effect of pre-stimulus SR on post-stimulus SR, ($b = 0.97$, $p < .001$, [0.69, 1.25]), such

that greater pre-stimulus SR predicted significantly greater post-stimulus SR. Lastly, there was no significant effect of pre-stimulus affect on post-stimulus SR ($b = -0.11, p = .53, [-0.46, 0.24]$).

There was no significant interaction between post-stimulus affect and participant group, $b = -0.41, p = .06, 95\% \text{ CI } [-0.85, 0.02]$. For unaffected participants, there was a significant relationship between post-stimulus affect and post-stimulus SR ($b = 0.70, p < .001, [0.37, 1.03]$), such that greater post-stimulus affect scores significantly predicted greater post-stimulus SR. For SIAD participants, however, there was no significant relationship between post-stimulus affect and post-stimulus SR ($b = 0.29, p = .16, [-0.12, 0.70]$). For a plot of the interaction, see Figure 2.

Figure 2

Interaction between Post-Stimulus Affect and SIAD for SR



Note. The interaction between Self-Reported Sexual Response and Post-Stimulus Affect by Participant Group, $n = 113$. The y-axis represents SR, where scores range from 0 (minimum) to 36 (maximum). The x-axis represents post-stimulus Affect, by SD, where -1 is 1 SD below the mean, and +1 is 1 SD above the mean.

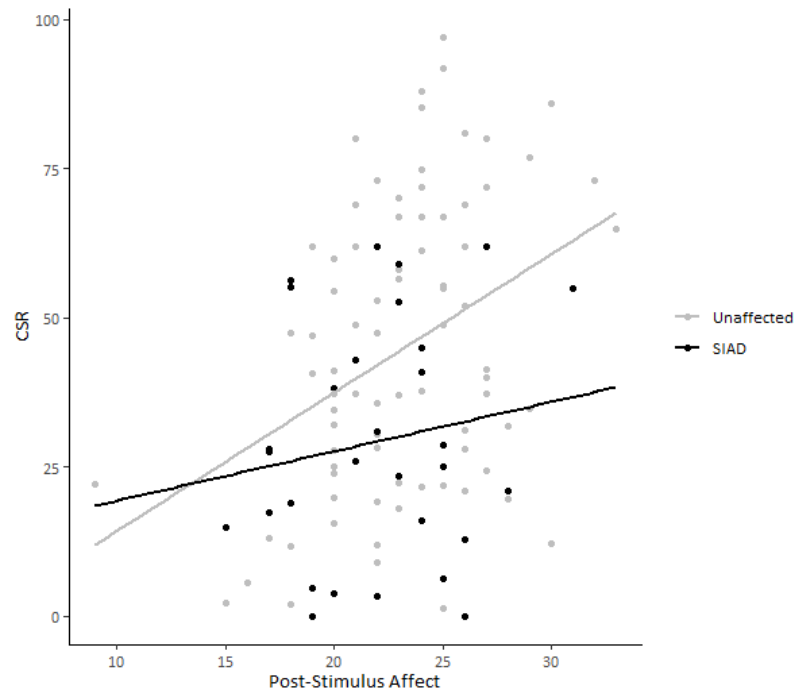
Moderation by Participant Group on Affect and CSR

There was a significant effect on post-stimulus affect for CSR ($b = 1.84, p = .01, 95\% \text{ CI } [0.40, 3.27]$), such that greater positive affect predicted significantly greater CSR. There was a significant effect of participant group on CSR ($b = -8.71, p = .04, [-17.07, -0.35]$), such that unaffected participants had significantly greater CSR as compared to SIAD participants. In terms of covariates, there was a significant effect on the pre-stimulus affect of CSR ($b = -2.29, p = .01, [-4.03, -0.56]$), such that lower pre-stimulus affect predicted greater CSR, but no significant effect of Stimulus Order on CSR ($b = -4.04, p = .32, [-12.14, 4.06]$).

There was no significant interaction between participant group and post-stimulus affect ($b = -1.99, p = .07, 95\% \text{ CI } [-4.16, 0.18]$). When probed by participant group, unaffected participants displayed a significant relationship between post-stimulus affect and CSR, ($b = 2.36, p = .004, [0.78, 3.95]$), such that more positive post-stimulus affect significantly predicted greater CSR. However, SIAD participants did not have a significant relationship between post-stimulus affect and CSR, ($b = 0.37, p = .72, [-1.69, 2.43]$). For a plot of this interaction, see Figure 3.

Figure 3

Interaction between Post-Stimulus Affect and SIAD for CSR



Note. The interaction between CSR (Continuous Self-Report Sexual Arousal) and Post-Stimulus Affect by participant group, $n = 113$. X-axis units are standard deviations from Post-Stimulus Affect mean. Y-axis represents mean CSR, measurements of which range from 0 to 100.

Moderation by Participant Group on Affect and State Sexual Desire

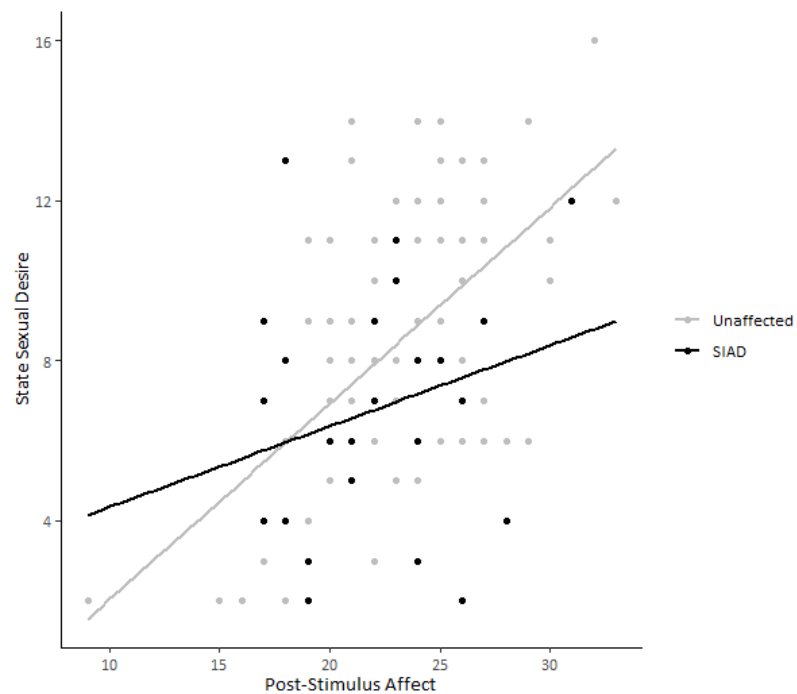
There was a significant effect of post-stimulus affect on post-stimulus state sexual desire ($b = 0.43, p < .001, 95\% \text{ CI } [0.23, 0.63]$), such that greater positive post-stimulus affect was significantly related to greater post-stimulus state sexual desire. There was a significant effect of participant group on post-stimulus state sexual desire ($b = -1.51, p = .01, [-2.70, -0.31]$), such that unaffected participants had significantly greater post-stimulus state sexual desire than SIAD participants. As for covariates, there was a significant effect of Stimulus Order ($b = -1.86, p = .001, [-2.99, -0.73]$), such that participants who saw Stimulus Order One had significantly more state sexual desire than participants in Stimulus Order Two. There was no significant effect of

pre-stimulus state sexual desire ($b = 0.30, p = .15, [-0.11, 0.72]$), or pre-stimulus affect ($b = -0.10, p = .40, [-0.34, 0.14]$).

There was no significant interaction between SIAD and post-stimulus affect ($b = -0.29, p = .06, 95\% \text{ CI } [-0.59, 0.01]$). When probed, unaffected participants had a significant relationship between post-stimulus affect and post-stimulus state sexual desire ($b = 0.51, p < .001, [0.29, 0.73]$). For SIAD participants, however, there was no significant relationship between post-stimulus affect and self-reported sexual desire ($b = 0.22, p = .13, [-0.06, 0.50]$). For a plot of the interaction, see Figure 4.

Figure 4

Interaction between Post-Stimulus Affect and SIAD for State Sexual Desire



Note. The interaction between Post-Stimulus State Sexual Desire and Post-Stimulus Affect by participant group, $n = 109$. The y-axis represents state sexual desire, where scores range from 0 (minimum) to 18 (maximum). The x-axis represents Post-Stimulus Affect scores, by standard deviations from the mean.

Post-Hoc Comparisons by Stimulus Order

Stimulus Order was originally added to models as a covariate to account for multiple stimulus presentation orders in Study One (see Moderation Models). In models measuring the relationship between affect and post-stimulus SR and post-stimulus state sexual desire, Stimulus Order emerged as a significant predictor. In all cases, participants in Stimulus Order One had significantly higher sexual response than those in Stimulus Order Two. To confirm the relationships between Stimulus Order and the outcome variables, two independent samples t-tests were run. Participants in Stimulus Order One ($n = 81$, $M = 17.90$, $SD = 5.65$) had significantly greater post-stimulus self-reported SR, $t(111) = 3.58$, $p < .001$, $d = .75$, 95% CI [0.32, 1.17], than participants in Stimulus Order Two ($n = 32$, $M = 13.69$, $SD = 5.61$). In addition, participants in Stimulus Order One ($M = 8.74$, $SD = 3.23$) had significantly greater state sexual desire scores, $t(111) = 3.71$, $p < .001$, $d = .77$, [0.35, 1.19], than participants in Stimulus Order Two ($M = 6.28$, $SD = 3.04$).

To further investigate the effects of combining Study One and Two Data, additional independent samples t-tests were run for Study One. In Study One, participants in Stimulus Order One ($n = 35$, $M = 17.49$, $SD = 5.55$) had significantly greater post-stimulus SR, $t(66) = 2.78$, $p = .007$, $d = 5.58$, 95% CI [0.19, 1.17] than those in Stimulus Order Two ($n = 32$, $M = 13.69$, $SD = 5.61$). In addition, participants in Stimulus Order One ($M = 8.43$, $SD = 3.18$) had significantly greater post-stimulus self-reported state sexual desire, $t(66) = 2.82$, $p = .006$, $d = 3.12$, [0.19, 1.18], than those in Stimulus Order Two ($M = 6.28$, $SD = 3.04$).

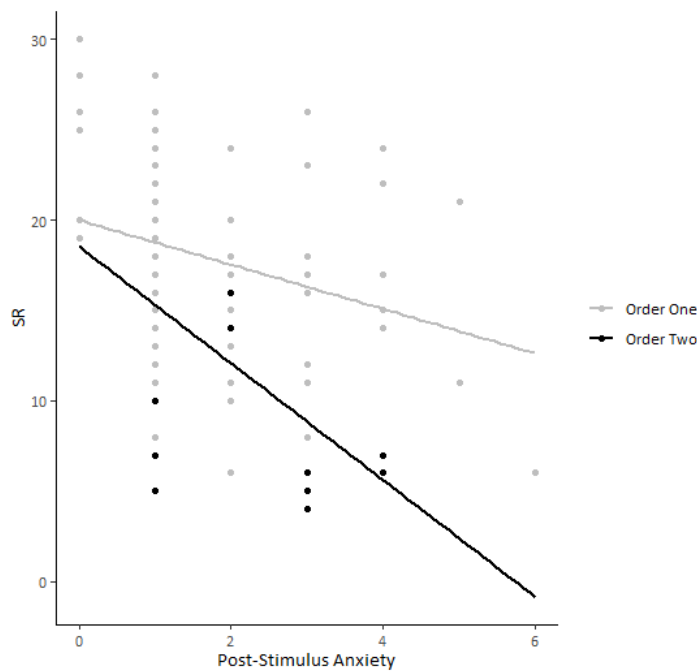
In line with previous literature indicating that curvilinear relationship between anxiety and self-reported sexual arousal (Bradford & Meston, 2006), I performed two moderations to assess the relationship between anxiety and sexual response (SR and state sexual desire). Given that only Study One contained two stimulus orders, only Study One data was used. These moderations also served to examine whether anxiety was significantly different between Stimulus

Order One ($M = 2.06$, $SD = 1.14$), and Stimulus Order Two ($M = 1.50$, $SD = 0.92$), and whether Stimulus Order moderated the relationship between anxiety and sexual response.

For moderations with post-stimulus anxiety and SR, there was a significant effect of post-stimulus anxiety on post-stimulus SR ($b = -1.80$, $p < .007$, 95% CI [-3.09, -0.52]), such that greater post-stimulus anxiety was significantly related to less SR. There was a significant effect of Order on SR ($b = -4.87$, $p < .001$, [-7.55, -2.20]), such that participants in Stimulus Order One had significantly greater post-stimulus SR than those in Stimulus Order Two. There was a significant interaction between post-stimulus anxiety and Stimulus Order ($b = -2.73$, $p = .04$, 95% CI [-5.33, -0.13]). When probed, participants in Stimulus Order One did not have a significant relationship between post-stimulus anxiety and SR ($b = -0.50$, $p = .53$, [-2.09, 1.09]). However, participants in Stimulus Order Two had a significant negative relationship between post-stimulus anxiety and SR ($b = -3.23$, $p = .003$, [-5.29, -1.17]). For a plot of the interaction, see Figure 5.

Figure 5

Interaction between Post-Stimulus Anxiety and Order for SR

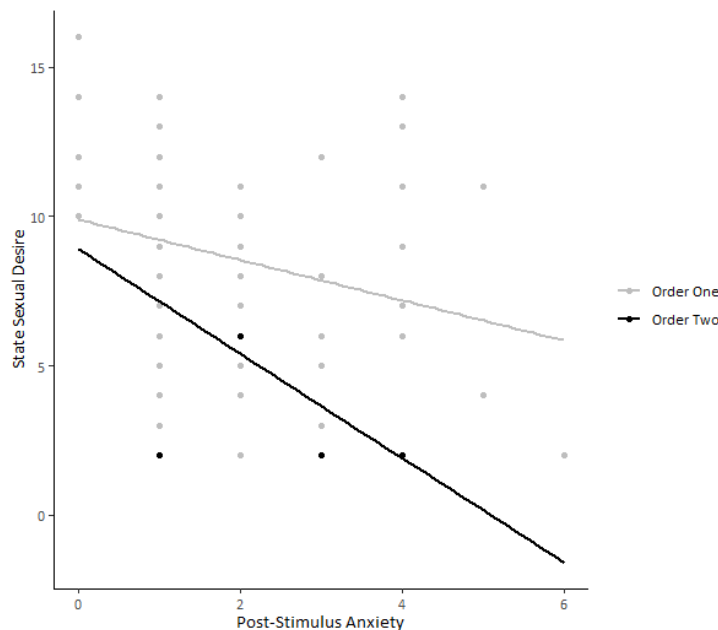


Note. The interaction between Post-Stimulus Anxiety and Post-Stimulus Sexual Response by Stimulus Order, $n = 67$. The y-axis represents post-stimulus Sexual Response, where scores range from 0 (minimum) to 36 (maximum). The x-axis represents Post-Stimulus Anxiety Score, by standard deviations from the mean.

In moderations with post-stimulus anxiety and state sexual desire, there was a significant effect of post-stimulus anxiety on post-stimulus sexual desire ($b = -0.95, p = .01, 95\% \text{ CI } [-1.68, -0.23]$), such that greater post-stimulus anxiety was significantly related to less state sexual desire. There was a significant effect of Stimulus Order on state sexual desire, such that participants in Stimulus Order One had significant greater state sexual desire than those in Stimulus Order Two ($b = -2.72, p < .001, [-4.22, -1.22]$). In addition, there was a significant interaction between post-stimulus anxiety and Stimulus Order ($b = -1.52, p = .04, [-2.99, -0.07]$). When probed, participants in Stimulus Order One did not have a significant relationship between post-stimulus anxiety and state sexual desire ($b = -0.22, p = .62, [-1.12, 0.67]$). However, participants in Stimulus Order Two had a significant negative relationship between post-stimulus anxiety and state sexual desire ($b = -1.75, p = .004, [-2.91, -0.60]$). For a plot of the interaction, see Figure 6.

Figure 6

Interaction between Post-Stimulus Anxiety and Order for State Sexual Desire



Note. The interaction between Post-Stimulus Anxiety and Post-Stimulus State Sexual Desire by Stimulus Order, $n = 67$. The y-axis represents post-stimulus State Sexual Desire, where scores range from 0 (minimum) to 18 (maximum). The x-axis represents Post-Stimulus Anxiety Score, by standard deviations from the mean.

Chapter 5

Discussion

The overarching goal of my thesis was to examine how trait differences in sexual desire moderated the relationship between affect and sexual response, and if participant group moderated the relationship between affect and sexual response. The latter investigation is particularly important as SIAD is a polythetic diagnosis, wherein women can, but do not have to endorse problematic low sexual desire. By examining both trait sexual desire and SIAD as moderators, we gain both a greater understanding of how these traits affect sexual cues processing, and how the similarities and differences between the two individual factors affect sexual cue processing.

To measure sexual response, I measured four dependent variables: genital arousal, SR, CSR, and state sexual desire. For genital response, there was no significant relationship between affect and genital response, nor did trait sexual desire or participant group moderate the relationship between affect and genital response. Across self-reported sexual response (SR, CSR, and state sexual desire), a pattern emerged. For moderations with SIAD, there was a significant positive relationship between positive affect and sexual response. For moderations with trait sexual desire, there was no significant relationship between affect and sexual response, nor any moderation by affect and sexual response by trait sexual desire. However, for all three measures of sexual response, there was a significant moderation by participant group. That is, unaffected women had a significant positive relationship between affect and sexual response, while SIAD women did not. These findings are discussed in further detail in each dependent variable's respective section.

Self-Reported Sexual Response (SR)

Contrary to my hypotheses, in moderations with trait sexual desire, there was no significant relationship between affect and SR. However, for moderations by SIAD, there was a significant relationship between post-stimulus positive affect and SR, such that greater positive affect was associated with greater SR. For both moderations by trait sexual desire and SIAD, there were no significant effects of pre-stimulus affect (included as a covariate) on pre-stimulus SR. There were, however, significant effects of stimulus order on post-stimulus sexual response, with participants in Order One having significantly greater SR than those in Order Two (see The Role of Stimulus Order for further discussion). As well, in moderations with SIAD, unaffected women had a significant positive relationship between affect and SR, unlike SIAD women (see SIAD and Affect for further discussion).

The significant positive relationship between affect and SR response is in line with previous literature on affect and SR (Carvalho et al., 2017; Koukounas & McCabe, 2001; Laan et al., 1994; Peterson & Janssen, 2007). Notably, I replicated Carvalho and colleagues' (2017) results without inducing affect prior to stimulus viewing, which adds to the ecological validity of the relationship between positive affect and SR. However, my results were not in line with previous studies that found that negative affect, particularly anxiety, predicted greater SR (Bradford & Meston, 2006; Koukounas & McCabe, 2001). It should be noted that the Affect Composite did include anxiety, but anxiety was not separately measured in this study. Therefore, it may be that anxiety and SR do have a relationship, but that it was not able to be parsed here.

Continuous Self-Reported Arousal (CSR)

Contrary to my hypothesis, in moderations by trait sexual desire, there was no significant relationship between affect and CSR. However, in line with my hypothesis, for moderations by SIAD, there was a significant relationship between post-stimulus positive affect and CSR, such that greater positive affect was associated with greater SR. In both moderations, there was a

significant negative relationship between pre-stimulus affect and CSR. As well, unaffected participants had significantly greater CSR than SIAD participants. However, trait sexual desire did not predict CSR, and there was no significant moderation by trait sexual desire. As with moderations with SR, unaffected women had a significant positive relationship between affect and SR, unlike SIAD women (see SIAD and Affect for further discussion).

As with SR, my results generally support previous literature indicating that greater positive affect significantly predicted greater self-reported sexual arousal (SR and CSR: Carvalho et al., 2017; Koukounas & McCabe, 2001; Laan et al., 1994; Peterson & Janssen, 2007). However, with pre-stimulus affect, greater negative affect significantly predicted CSR, which ran contrary to my rationale that pre-stimulus affect would be a covariate. As CSR is measured continually throughout stimulus presentation, this significant negative relationship may be analogous to previous findings that greater anxiety predicts greater genital arousal to sexual cues (Bradford & Meston, 2006). However, given that Affect Composite did not measure anxiety alone, it is not possible to make any conclusions regarding anxiety specifically. However, it is also important to note that in the post-stimulus self-report questions, participants were asked to rate their affect as it occurred during the stimulus trial. Thus, my findings regarding SR and CSR may be partially due to differences in concordance between measurement during stimulus presentation and self-reported affect after stimulus presentation. The difference between my SR and CSR findings is in line with noted differences between SR and CSR (Huberman et al., 2013). Particularly, CSR and SR may reflect different levels of processing – as CSR is rated during stimulus, it may be that during stimulus presentation, greater negative affect is predictive of greater self-reported sexual arousal (Huberman et al., 2013). However, with SR, which may reflect later stages of processing, greater positive affect is predictive of greater self-reported sexual arousal.

State Sexual Desire

In both moderations with trait sexual desire and participant group, there was a significant positive relationship between affect and state sexual desire, such that greater positive affect predicted greater state sexual desire. There was a significant positive relationship between trait sexual desire and state sexual desire, and unaffected participants had greater state sexual desire than SIAD participants. As well, in both moderations, there was a significant effect of Stimulus Order, such that Order One had significantly greater state sexual desire than those in Order Two (see The Role of Stimulus Order). In both moderations, there was no effect of pre-stimulus affect, or pre-stimulus sexual desire. Contrary to my hypotheses, there was no significant moderation by trait sexual desire. However, there was a significant moderation by SIAD, such that while unaffected participants had a significant positive relationship between affect and state sexual desire, SIAD participants did not (see SIAD and Affect for further discussion).

My findings regarding the relationship between affect and state sexual desire were in line with previous studies that found that participants with higher state sexual desire reported greater positive affect to sexual cues (Carvalho & Nobre, 2010a, 2010b, 2011). My results add to the literature on affect and state sexual desire via the addition of results from an in-lab study involving pre- and post-stimulus cue processing. As well, my results bring clarity to similarities and differences between SIAD and FSAD women, with my SIAD sample also reporting significantly lower levels of state sexual desire relative to unaffected women (Brotto et al., 2004).

Surprisingly, there was no moderation of state sexual desire by trait sexual desire, which is of note, given that sexual desire is often conceptualized as the interaction between trait and state sexual desire (Stark et al., 2015). While my results do not necessarily challenge the conceptualization of sexual desire as an interaction between trait and state sexual desire, they do not support that trait sexual desire moderates the relationship between affect and state sexual desire. Rather, trait sexual desire may interact with attentional capture to affect sexual cue

processing (Prause et al., 2008). This would explain differences in the literature between trait sexual desire and sexual cue processing, which have largely found effects using measures of early affective processing (i.e., ASR: Giargiari et al., 2005).

Genital Arousal

Contrary to my hypotheses, there was no significant relationship between affect and genital arousal (thermography, VPP) in both moderations with trait sexual desire or SIAD. Neither trait sexual desire nor SIAD significantly predicted either measure of genital arousal. As well, in all moderations, pre-stimulus affect did not significantly predict any measures of genital arousal. Overall, my results are in line with previous investigations, which found no significant relationship between affect and genital arousal (Carvalho et al., 2017; Peterson & Janssen, 2007; Ter Kuile et al., 2010). Therefore, while affect to sexual cues predicts later sexual processing (self-reported sexual response), this relationship is not true for genital arousal. In line with Bradford and Meston (2006), genital arousal may be better predicted by negative affect, specifically anxiety.

Affect and Sexual Response

Overall, my results indicate there is a significant relationship between affect and self-reported response, but that affect to sexual cues does not affect genital response. These results help clarify the role of affect in sexual cue processing, specifically that increased positive affect is significantly associated with greater self-reported sexual response, which is in line with the IMM (Toates, 2009). In addition, the relationship between affect and sexual response differs in SIAD women, indicating that the processing of affect may contribute to the experiences of problematic sexual desire.

However, there was no significant moderation by trait sexual desire, which runs contrary to my hypotheses. The lack of significant effects of trait sexual desire appears to contradict the IMM, wherein individual factors should affect processing of sexual cues. However, it may be that

trait sexual desire does affect processing of sexual cues, but not via the relationship between affect and genital arousal. It also may be that trait sexual desire acts on early (or automatic) processing of sexual cues, primarily acting on attention to sexual cues (Giargiari et al., 2005; Prause et al., 2008), and that greater attention paid to sexual cues influences the sexual response. This would explain why, when using early measures of affect or attention to sexual cues (Giargiari et al., 2005; Prause et al., 2008), we see that trait sexual desire predicts affect and attention to sexual cues, but do not see the same relationship with genital arousal.

SIAD and Affect

I hypothesized that unaffected women would have a stronger relationship between positive affect and genital response than SIAD women. However, the relationship between SIAD women's affect and self-reported sexual arousal did not differ from unaffected women's, even when both genital measures were mini meta-analyzed. These results mimic research on genital arousal in women with FSAD showing no significant difference in genital arousal between women with FSAD and unaffected women (Meston et al., 2010). Although participant group did not predict differences in genital arousal between participant groups, participant group did predict differences in self-reported sexual response, continuous self-reported sexual arousal, and state sexual desire. Therefore, SIAD women may exhibit lower concordance between genital and self-reported sexual arousal as demonstrated in samples examining FSAD and sexual dysfunctions more generally (Brotto et al., 2004; Laan et al., 2008; Meston et al., 2010).

It should be noted that these results contradict cognitive emotional models of sexual dysfunction and previous cognitive affective models of sexual dysfunction (Barlow et al., 1983). In both of these models, individuals with sexual dysfunction enter sexual situations with either greater negative affect (Barlow et al., 1983), or misattributions that result in greater negative affect (Nobre, 2009), resulting in less sexual arousal. However, SIAD and unaffected women's genital arousal was not significantly different, nor were their affective responses to the sexual

stimuli. One possible interpretation is that SIAD women are experiencing similarly positive affect as unaffected women (thus, no significant group difference in self-reported affect), but may attend less to their levels of positive affect than unaffected women. This mirrors literature on interoception, (i.e., one's awareness of one's bodily sensations) and genital arousal, where greater levels of interoception are related to greater sexual arousal to sexual stimuli (Handy & Meston, 2018). Therefore, it may be that while interoception is related to genital arousal, experiences of positive affect are related to experience self-reported state sexual arousal and desire.

The findings regarding SIAD's women's genital arousal, and the similarities between SIAD women's genital arousal and FSAD women's genital arousal, may shed some light on clinical treatments for SIAD. Current models for treatment of SIAD women include personal responsibility/intimate team approaches to sexual functions (McCarthy, 2015), mindfulness-based cognitive therapy (MBCT; Brotto et al., 2021), and group supportive-expressive sexual education therapy (STEP; Leichsenring & Leibing, 2007). While current MBCT aims to decrease negative affect (Paterson et al., 2017), gains with SIAD women may be also be found in increasing awareness of positive affect to sexual cues.

One question that remains is why the relationship between affect and self-reported sexual arousal (SR, CSR, state sexual desire) is significantly moderated by participant group but is not significantly moderated by levels of trait sexual desire. One clear difference between SIAD and low trait sexual desire women is that to be diagnosed with SIAD, women must endorse clinically significant distress regarding their low desire. These increased levels of distress may manifest in greater anxiety to sexual cues, which could serve to dampen the relationship between positive affect and sexual arousal. Women with other sexual dysfunctions (which also require significant distress present for a diagnosis) have been shown to have a significantly greater level of anxiety than unaffected women (Barlow, 1986). In addition, the difference in moderation between SIAD and trait sexual desire could be affected by the polythetic SIAD criteria. While some SIAD

women endorse symptoms that load onto low trait sexual interest, difficulties in trait sexual desire may not be the most prominent, or distressing symptom. Women can also receive the diagnosis if they endorse symptoms of low sexual arousal (Association, 2013). Therefore, more research is needed regarding differences in symptom profiles that women endorse to meet SIAD criteria, and how these drive differences in sexual cue processing.

The Role of Stimulus Order

Stimulus Order was originally added as a covariate to account for differences in stimulus presentation between Study One and Study Two. While this covariate was not expected to be significant, participants who saw the stimuli in Stimulus Order One ($n = 81$) had significantly greater SR and state sexual desire ($n = 32$), than participants in Stimulus Order Two. When post-hoc independent samples t-tests were run using on Study One data (to eliminate the possible effects of Study Two data), effects were still consistent (p 's $\leq .007$, d 's ≥ 3.10). In addition, in Study One, the amount of SIAD participants in each testing conditions was roughly equivalent (Stimulus Order One: $n_{\text{unaffected}} = 26$, $n_{\text{SIAD}} = 9$, Stimulus Order Two: $n_{\text{unaffected}} = 25$, $n_{\text{SIAD}} = 7$).

One possible explanation for the results is that participants in Stimulus Order One had greater anxiety to sexual cues, given that it was their first time viewing sexual stimuli in the lab. In line with Bradford and Meston (2006), when state anxiety is in the moderate range, greater state anxiety may be predictive of greater sexual arousal. While both groups endorsed low overall anxiety ($M_{\text{Order One}} = 2.06$, $SD_{\text{Order One}} = 1.14$, $M_{\text{Order Two}} = 1.50$, $SD_{\text{Order Two}} = 0.92$), the mean of Stimulus Order One's anxiety scores is closer to the "moderate anxiety range" than that of Stimulus Order Two. Thus, there may be a positive relationship between anxiety and state sexual response for participants in Stimulus Order One, but not in Stimulus Order Two.

To test this post-hoc hypothesis, and to assess whether Stimulus Order significantly moderated the relationship between anxiety and self-reported sexual response, I ran two moderations by Stimulus Order on the relationship between post-stimulus anxiety and sexual

response (SR and state sexual desire). Both moderations were significant, with a significant negative relationship between post-stimulus anxiety and sexual response, and with Stimulus Order significantly moderating the relationship between anxiety and sexual response.

Surprisingly, in moderations with both SR and state sexual desire, participants in Stimulus Order One (who saw preferred stimuli first) had no significant relationship between post-hoc anxiety and sexual response (p 's > .50). However, participants in Stimulus Order Two (who saw preferred stimuli third) had a significant negative relationship between post-hoc anxiety and sexual response, with greater post-hoc anxiety predicting less sexual response ($p < .004$).

One possible explanation for these results is that while participants in Stimulus Order One had significantly greater anxiety scores, this anxiety was related to the testing session rather than to the sexual cues. Participants in Stimulus Order Two, who had experienced two prior testing sessions, may not have had the same anxiety – thus their anxiety scores may more so reflect anxiety towards sexual cues. Therefore, Stimulus Order Two participants may display a relationship with anxiety similar to what Bradford and Meston (2006) report – that low levels of state anxiety to sexual cues ($M_{\text{Order Two}} = 1.50$, $SD_{\text{Order Two}} = 0.92$, range = 0 to 9) are predictive of lower sexual response.

As well, it is important to consider that some of my participants were recruited based on their own awareness of their sexual desire and arousal difficulties. It is possible some participants may have had perceived performance demand (that the experimenter wanted them to become aroused), or internalized expectations regarding their own arousal, which could have impacted their feelings of anxiety in the lab sessions. While these results are post-hoc and need to be replicated in an a-priori design, they may shed light on the importance of anxiety in affective response, and the role of anxiety in multiple-session psychophysiological laboratory studies. It should also be noted that while my moderations were significant, differences in anxiety between Stimulus Orders were relatively small – comprising approximately 0.5 of a point on a 10-point

scale (anxiety item ranging from 0 to 9). Therefore, while the results are surprising and warrant follow up, they should not be considered clinically significant.

Limitations

Limitations in this thesis include participant biases in recalling their affective response to sexual stimuli, the combination of positive and negative affect in the Affective Composite, problems in interpreting directionality of the relationship between CSR and affect, and a lack of diversity in participants and stimuli. Participants' ability to recall affect to sexual stimuli may have affected our results, notably, in that affective recall is often biased towards the overestimation of affect (Brookings & Serratelli, 2006; Colombo et al., 2020). Particularly, my results indicated relatively high affect ($M = 24.07$, $SD = 3.24$, range = 0 to 36) towards sexual cues. Sexual cues may be particularly susceptible to over-reports of affect, given the high reward value of sexual cues (Toates, 2009). Continuous measurement of affect during stimulus presentation may be particularly important in studies with lengthy stimulus presentation, providing a more valid view of affect during stimulus presentation.

In addition to affective recall, another limitation lies within the computation of the Affect Composite. While we initially conceptualized affect as consisting of positive and negative affect, which both were measured separately, my exploratory factor analysis revealed a two-factor solution, resulting in an Affect composite that combined negative affect (reverse-coded) and positive affect. It is possible that this was due to the limited number of questions that underwent factor analysis, given disparate pre- and post-stimulus question sets. Therefore, a study that includes and factor-analyzes the full Film & Tape Scale (Hackbert & Heiman, 2002), both pre- and post-stimulus presentation may produce a factor analysis that is more in line with what Laan and colleagues (2008) produced. While the studies included in my thesis did include measures with separate positive and negative affect scales, the PANAS (Watson et al., 1988) was only measured at baseline, and thus could not be used to measure state level affect to sexual cues.

As with many studies, sample makeup should be considered a limitation, given that my samples consisted of predominantly white, post-secondary cisgender women. Particularly, it is important to address that race is a powerful contextual cue in a participant's viewing and experience with sexual stimuli. Particularly, white participants endorse greater sexual arousal when looking at race-congruent sexual stimuli (i.e., stimuli in which the actors' race matches their own race; Penniston et al., 2021). While this may have resulted in greater sexual arousal in my predominantly white sample, it is possible that this was a factor in my smaller racialized sample. Therefore, future studies should include racially diverse stimuli to account for potential racial differences in sexual arousal when viewing stimuli.

In addition, research on disorders of sexual arousal/desire has primarily focused on androphilic women (i.e., primarily or exclusively attracted to men). While some of my women identified attraction to more than one gender, there is a dearth of research on sexual arousal or interest difficulties in queer allosexual (i.e., feeling sexual attraction towards others) women. It should be noted that there is some discussion regarding the difference between SIAD (and its predecessors) with asexuality (i.e., not feeling sexual attraction, arousal, or desire), but does not experience clinical distress as a result (Bogaert, 2015; Brotto et al., 2015). Some evidence suggests that despite stereotypes (i.e., "Lesbian Bed Death", in which two women in a relationship cease to have sex), women who are attracted to women report that genital arousal is not necessary to their sexual satisfaction (Cohen & Byers, 2014). Despite lesser endorsements of genital arousal as necessary to sexual satisfaction, efforts should be made to study sexual arousal and interest in sexual minority women, as sexual orientation and its resulting cognitions may provide greater insight into women's sexual functioning in general.

Future Directions

Previous research in low sexual desire women has primarily focused on the role of negative affect in sexual response (Nobre, 2009). While negative affect is pertinent (Nobre &

Pinto-Gouveia, 2006a), in my sample, SIAD and unaffected women did not differ significantly on measures of affect, including both negative and positive affect. Therefore, SIAD women may experience mixed affect (co-occurrence of positive and negative affect (Larsen & McGraw, 2014) in processing of sexual stimuli. Mixed affect to sexual cues is associated with arousal and desire (Peterson & Janssen, 2007), with participants reporting both high-arousal positive and negative affect after stimulus viewing (Peterson & Janssen, 2007; Staley & Prause, 2013). Therefore, measures of mixed affect may allow for more parsing of the role of negative and positive affect respectively in sexual cue processing.

Stimulus choice may also be an area of expansion. While all women in my study endorsed an attraction to men, and thus my stimuli were “preferred” for these women, future investigations could include sexual stimuli that women self-endorse as appealing for them. For example, many heterosexual women report enjoying and seeking out erotica that focuses on sexual interactions between two women, partially due to viewing “lesbian” porn as more authentic and respectful of women (Meehan, 2021). It also may be particularly useful to use different varieties of porn when studying androphilic women, given that androphilic women generally show a gender non-specific pattern of sexual arousal (i.e., not having significantly greater arousal to their preferred stimuli; Dawson & Chivers, 2014a). Therefore, a stimulus selection that emphasizes participants’ preferences for sexual cues may provide a more ecologically valid understanding of sexual cue processing.

Lastly, research should also examine early processing of sexual cues, as the dependent variables in this thesis were measured later in the sexual response. While there is some research on the role of affect in early attention to sexual cues (Dawson & Chivers, 2016; Nummenmaa et al., 2012; Vardi et al., 2006), electroencephalography, particularly, the P300 Event Related Potential, may be of use, given its ability to index affect (Polich, 2007). In addition, research on the early processing of sexual cues may allow for more direct comparisons with previous research

on affect and trait sexual desire, which uses the ASR response (Giargiari et al., 2005; Prause et al., 2008).

Conclusion and Implications

In the thesis I found that, across multiple self-reported measures of sexual response, greater positive affect predicted greater sexual response. In addition, I found that while unaffected women had a significant positive relationship with affect and sexual response, SIAD women did not display this relationship. These data add to the literature regarding the relationship between affect and SR. However, trait sexual desire did not moderate the relationship between affect and sexual response. Notably, this is the first study to compare SIAD and trait sexual desire as moderators of sexual cue processing.

These findings have important implications for affective models of sexual dysfunction. My results ran contrary to multiple models of sexual dysfunction, which indicate that women with sexual dysfunctions experience greater negative affect to sexual cues (Barlow et al., 1983; Nobre, 2009). However, my SIAD and unaffected participants did not significantly differ in their levels of affect, in either pre- or post-stimulus viewing. But, while unaffected participants had significant positive relationships between SR, CSR, and state sexual desire, SIAD participants had no significant relationships. My results indicate that SIAD women may not experience more negative affect, and that the lack of positive relationship between affect and sexual arousal in SIAD women may have treatment implications for problematic low sexual desire. This thesis may have treatment implications for problematic low sexual desire, specifically regarding the lack of observed positive relationship between positive affect to sexual cues and self-reported sexual arousal in women with problematic low sexual desire. This relationship may be a target of future therapeutic approaches.

More broadly, this thesis demonstrates the importance of multi-method approaches to understanding sexual response that assessing varying measures of sexual response (genital

arousal, self-reported sexual response) allows for a more nuanced understanding of how moderating factors influence different stages of sexual cue processing. This thesis is also part of a body of literature that explores negative affect to sexual cues, which are traditionally thought of as eliciting primarily positive affect.

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Appendix A

SIAD Screener Items

Before we begin I'd like to remind you that all of your answers are completely confidential. You are not required to respond to questions that you feel uncomfortable answering. If you feel uncomfortable answering a question, please let me know and we'll skip it and move on to the next. I'd also like to remind you that you are free to stop the interview at any time. Do you have any questions?

Assessment for Sexual Interest/Arousal Disorder (SIAD)

Do you currently experience low levels of sexual interest or desire? By sexual interest or desire, we mean sex drive or the motivation to engage in sexual activity.

No Yes

Do you currently experience low levels of sexual arousal or excitement? By sexual arousal or excitement, we mean genital responses like vaginal lubrication or wetness, throbbing, and/or warmth, and other physical responses like changes in heart rate or breathing rate. Please do not consider your experience with orgasm when answering the questions.

No Yes

Next I'm going to ask you a series of questions about different aspects of sexual interest and arousal, and you can answer Yes or No about whether they apply to you. For all of these questions, please think about how things have been for you over the past 6 months.

1. *Absent/reduced sexual interest:* Have you noticed that your interest in sexual activity is absent or markedly reduced?

No Yes

2. *Absent/reduced sexual thoughts:* Have you noticed that your sexual thoughts or fantasies are absent or markedly reduced?

No Yes

3. *No/reduced sexual initiation:* Have you noticed that you do not initiate sexual activity, or initiate infrequently, and usually turn down a partner's invitations for sexual activity?

No Yes

The next question asks about sexual or erotic stimuli or triggers, such as seeing an attractive person, watching a sex scene in a movie, or reading a sex scene in a book...

4. *Absent/reduced sexual response:* Have you noticed that, in response to any type of sexual or erotic stimuli, such as a sex scene in a movie or book, that you have a low level of sexual interest or no sexual interest?

No Yes

Have you engaged in one or more sexual encounters (sexual activity with a partner and/or solo masturbation) over the past 6 months?

No Yes

5. *If Yes - Absent/reduced sexual excitement/pleasure:* When you engage in sexual encounters, have you noticed that your experience of sexual excitement or pleasure is absent or markedly reduced?

No Yes

If yes, How often is this the case?

Occasionally (25% of occasions) Almost all of the time (75%)
 Half of the time (50%) All of the time (100%)

6. *If Yes - Absent/reduced sexual sensations:* When you engage in sexual encounters, have you noticed either absent or a low level of genital or non-genital sensations?

No Yes

If yes, How often is this the case?

Occasionally (25% of occasions) Almost all of the time (75%)
 Half of the time (50%) All of the time (100%)

7. Do these problems cause you significant distress? By distress, I mean unhappiness, frustration, sadness, or similar feelings. For example, if you were able to take a pill to improve your arousal or desire, would you do so?

No Yes

8. Do these problems cause significant difficulty in your relationship OR (if not in a relationship) significant difficulty with dating?

No Yes

9. Can you explain how (briefly)?

10. How long have you been experiencing these problems? _____
months / years

11. Have there been any other changes in your life that you think may be related to your decreased arousal or desire?

12. (If in a relationship) Have you experienced these problems only with your current partner, or also with past partners? _____

13. Do these problems impact only your sexual relationship with a partner, only your sexuality by yourself (meaning your desire and arousal with masturbation), or both?

14. Are you currently engaged in treatment (e.g., sex or couple therapy) for your sexual difficulties, or do you plan to start treatment in the near future?

No Yes

Diagnosis (modified for Study Two):

Endorsement of 2 or more indicators (with 50%+ frequency for 4 and 6)? No Yes

Significant distress? No Yes

Duration of 6 months or longer? No Yes

Yes to all 3 above questions? No – Subclinical SIAD Yes - SIAD

Appendix B

Study One and Two Measures Not Included in Thesis

Baseline Questionnaire

Female Sexual Function Index (Rosen et al., 2000): assesses 6 domains of sexual functioning associated with DSM-IV-TR diagnoses of female sexual dysfunction; desire, arousal, lubrication, orgasm, satisfaction, and pain. The FSFI has been validated in women with and without desire and arousal difficulties and will be the primary self-report measure to assess current sexual functioning, using clinical cut scores as a guide.

Detailed Assessment of Sexual Arousal (unpublished): assesses experience of subjective and genital arousal, and pleasure from genital stimulation. The DASA will provide a more detailed characterization of rewards associated with women's experience of their sexual response to sexual stimuli outside of the laboratory.

Relationship Assessment Scale (Hendrick et al., 1998): is a 7-item measure of relationship quality with excellent predictive validity.

Sexual Interest and Desire Inventory (Spector et al., 1996): is a 14-item questionnaire validated for use with clinical populations. Item domains assess frequency and intensity of responsive and proceptive sexual desire and arousal over the past month and will represent baseline dyadic sexual desire.

The Modified Sexual Motivations Questionnaire (Spector et al., 1996): assessed the importance of approach/avoidance goals for sex based on typical experience.

The Sexual Inhibition and Sexual Excitation Scale for women (Graham et al., 2006): to assess typical sexual response to sexual stimuli.

Balanced Inventory of Desirable Responding (Paulhus, 1991): measured the tendency to give socially acceptable or desirable responses.

Report of Behaviour and Feelings (Velten et al., 2020): assessed the frequency of solitary sexual and nonsexual behaviours (e.g., flirted with someone, dressed in a sexy outfit) with additional items to assess masturbation and erotica use. In Study One and Study Two, primarily assessed solitary responsive desire.

Beck Depression Inventory (Beck et al., 1961): was used for measuring the severity of depression. This measure is to confirm that eligible participants are not experiencing symptoms of depressed affect.

Cues for Sexual Desire (McCall & Meston, 2006): assessed the cues that trigger sexual desire, considering its contextual nature and individual differences in factors that can contribute to sexual desire. It has been validated such that women with low sexual desire report fewer cues than women without sexual difficulties.

Appendix C

HSREB Ethics Approval Letter



QUEEN'S UNIVERSITY HEALTH SCIENCES & AFFILIATED TEACHING HOSPITALS RESEARCH ETHICS BOARD (HSREB)

HSREB Amendment Acknowledgment/Ethics Clearance

October 26, 2017

Dr. Meredith Chivers
Department of Psychology
Humphrey Hall

ROMEO/TRAQ: #6021570
Department Code: PSYC-196-17
Study Title: Sexual Desire and Arousal in Women
Review Type: Delegated
Date Ethics Clearance Issued: October 26, 2017

Dear Dr. Chivers,

The Queen's University Health Sciences & Affiliated Teaching Hospitals Research Ethics Board (HSREB) has reviewed the amendment application and granted ethics approval/acknowledgement for the following:

- Addition of Jackie Huberman, PhD student to the study team
- CORE Certificate – J. Huberman
- Revised Study Procedures – Version 4 – October 2, 2017 - to add measures of current mood and recent experiences; add behavioural motivation task to assess interest in sexual stimuli; add neutral stimulus; not ask participants about arousal prior to leaving the lab; revise experimental measures to ask about experience with thermal imaging camera; remove the thought journal following the sexual arousal assessment)
- Revised Experimental Measures – Version 2
- Copies of questionnaire measures added to lab session – a) Beck Anxiety Inventory b) Hassles Scale c) Positive and Negative Affect Schedule
- Revised Screening Script for Any Woman – Version 3 – October 2, 2017
- Revised Screening Script for SIAD Women – Version 5 – October 2, 2017
- Revised Screening Script for Control Women- Version 4 – October 2, 2017
- Revised Letter of Information and Consent Form – SIAD Women – Version 5 – October 2, 2017
- Revised Letter of Information and Consent Form – Control Women – Version 5 – October 2, 2017
- Revised Letter of Information and Consent Form – Online Baseline Questionnaire – Version 2 – October 5, 2017

Yours sincerely,

A handwritten signature in cursive script that reads "Albert F. Clark".

Chair, Health Sciences Research Ethics Board

The HSREB operates in compliance with, and is constituted in accordance with, the requirements of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2); the International Conference on Harmonisation Good Clinical Practice Consolidated Guideline (ICH GCP); Part C, Division 5 of the Food and Drug Regulations; Part 4 of the Natural Health Products Regulations; Part 3 of the

Medical Devices Regulations, Canadian General Standards Board, and the provisions of the Ontario Personal Health Information Protection Act (PHIPA 2004) and its applicable regulations. The HSREB is qualified through the CTO REB Qualification Program and is registered with the U.S. Department of Health and Human Services (DHHS) Office for Human Research Protection (OHRP). Federalwide Assurance Number: FWA#:00004184, IRB#:00001173

HSREB members involved in the research project do not participate in the review, discussion or decision.